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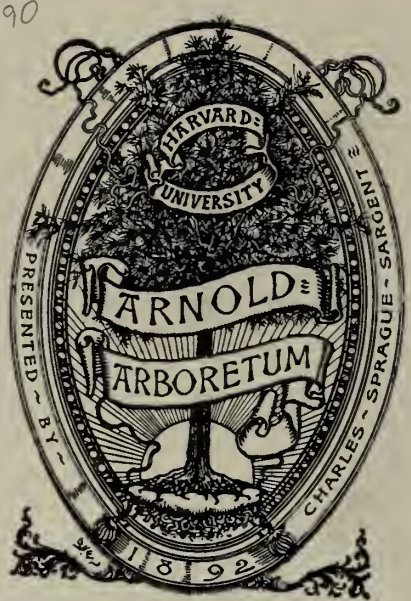

A

TREATISE

ON THE

CULTURE OF THE VINE.

Entered at Stationers Hall.

A

TREATISE

ON THE

CULTURE OF THE VINE,

EXHIBITING NEW AND ADVANTAGEOUS METHODS OF

PROPAGATING, CULTIVATING, AND TRAINING

THAT

PLANT,

SO AS TO RENDER IT ABUNDANTLY FRUITFUL.

TOGETHER WITH

NEW HINTS ON THE FORMATION

OF

VINEYARDS in ENGLAND.

By WILLIAM SPEECHLY,
GARDENER to the DUKE of PORTLAND.

YORK:

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DEDICATION.

TO

His GRACE the DUKE of PORTLAND,

&c. &c. &c.

MY LORD,

I Have the greateſt ſatisfaction in the honour of being permitted to give the Public this Treatiſe on the Culture of the Vine under your Grace's patronage, as it affords me an opportunity of acknowledging the very great aſſiſtance I have conſtantly received from your Grace in the progreſs of this work.

The various modes of cultivating the Vine, and bringing its fruit to the higheſt degree of perfection that this climate will admit of, has long been one of the firſt objects of my attention; and I with gratitude repeat my obligations to your Grace, for the ſupport and encouragement you have given the endeavours I have exerted in the purſuit of this ſtudy.

As

As this work is the reſult of many years application and actual experience, and contains, as I believe, much new and original matter, I am willing to flatter myſelf that it will prove neither uſeleſs nor unacceptable to my readers.

The ſucceſs of my endeavours is the beſt plea for my preſuming to ſubmit this performance to their peruſal: And as I have had the good fortune to receive your Grace's approbation in almoſt every ſtage of this undertaking, I venture to communicate it to the Public with a degree of confidence which nothing but ſo diſtinguiſhed a ſanction could induce me to entertain.

I have the honour to be,

My Lord,

Your Grace's

Moſt obedient,

And moſt dutiful ſervant,

WM. SPEECHLY.

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PREFACE.

THERE never was a period when the ſcience of gardening was ſo univerſally and ſo ardently cultivated as it is at preſent; and of the extenſive field of Horticulture, no part affords more agreeable amuſement, or yields more ſolid ſatiſfaction and advantage, than that refined and elegant branch of it, which concerns the forcing of fruits, natives of warmer climes; and amongſt theſe, though the variety of them be ſo great, the Vine ſtands foremoſt and the moſt conſpicuous.

Of all the numerous ſorts of fruits indulgent nature produces for the uſe of man, that of the grape muſt be eſteemed her nobleſt gift; for although various others not only afford comforts, but many of them even contribute to the luxury of the human race, yet none of them tend ſo eminently as does this fruit, "to glad the heart."—Hail then, precious Vine! let me modeſtly preſume to treat of thy culture, and to ſet forth thy virtues, a theme worthy of the immortal gods! O, may thy ſuperior excellences everlaſtingly inſpire man with duty, and with unfeigned gratitude to the all-bounteous Giver.

In the moſt early ages the Vine became an object of attention and improvement; for we find it the firſt-cultivated plant

on

on record in holy writ, *Gen.* ix. 20. And if we duly conſider the vaſt importance of its fruit in every ſhape and view, it may juſtly be eſteemed the beſt and moſt uſeful fruit-tree in the world. The ripe fruit ſerves to conſtitute a rich and wholeſome repaſt; and when dried, forms a moſt material and lucrative article of commerce to the inhabitants of many parts of the globe: But the moſt important and moſt tranſcendant article, wine, may juſtly be eſteemed as one of our choiceſt bleſſings, ſo the moſt valuable gift of nature.

From the ſituation of this iſland, and from the nature of the Vine, it may ſeem doubtful whether wine can be made in this country to any conſiderable national advantage: But ſtill we find, by experience, that by artificial means, even the lateſt kinds of grapes may be brought to almoſt as high a degree of perfection as they are in their own native ſoils and climes. The principal objects of expence required for this end are *fuel* and *glaſs*; the former article is of ſmall conſideration in counties where coals abound, but glaſs is become a truly ſerious affair; and indeed it were much to be wiſhed, that glaſs employed in gardens ſhould be exempt from duty; for pleaſe to conſider, by the aid of this uſeful material in gardening, our markets would be more plentifully ſupplied with many kinds of fruit, and alſo with rare and wholeſome vegetables, at a much earlier ſeaſon than in the natural way they can poſſibly be; and theſe, let me obſerve, are not to be conſidered as articles of luxury.

But

But in regard to the variety of plants, generally cultivated in ſtoves, &c. I may properly add, that, independantly of profit, every denomination of Forcing-houſes is capable of affording to a ſpeculative mind, a ſource of rational pleaſure and real ſatisfaction.

An attention to the progreſs of vegetable life adminiſters to the mind ſomething more ſolid than mere amuſement.—The budding, leafing, and flowering of plants, together with the progreſs of the various fruits from their firſt infantile appearance, to the final period of their perfection, all unfold a ſcene of admiration and amazement, of gratitude and thankfulneſs.*

* "There is a particular pleaſure to ſee things in their origin, and by what "degrees and ſucceſſive changes they riſe into that order and ſtate we ſee "them in afterwards, when compleated. I am ſure, if ever we would view "the paths of Divine Wiſdom, in the works and in the conduct of nature, "we muſt not only conſider how things are, but how they came to be ſo.

"It is pleaſant to look upon a tree in the ſummer, covered with its green "leaves, decked with bloſſoms, or laden with fruit, and caſting a pleaſing "ſhade under its ſpreading boughs; but to conſider how this tree, with all "its furniture, ſprang from a little ſeed, how nature ſhaped it, and fed it "in its infancy and growth; added new parts, and ſtill advanced it by "little and little, till it came to this greatneſs and perfection. This, me-"thinks, is another ſort of pleaſure, more rational, leſs common, and which "is properly the contemplation of Divine Wiſdom in the works of nature."

Dr. Burnet's Theory of the Earth, vol. i. book i. chap. v.

The humble Hyſſop on the wall, as well as the lofty Cedar, ſhows plainly that an Almighty and an all-wiſe hand has formed it. Nature's works are all complete, and the more minutely we obſerve, inveſtigate, and conſider them, the more we muſt admire the wiſdom, and adore the goodneſs of the munificent and auguſt Creator.†

To

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† Dr. R. Watſon, in his Chemical Eſſays, vol. i. p. 86, has thus judiciouſly obſerved the ſurpriſing and beautiful regularity of nature.

"There are a great many circumſtances relative to the manner in which different ſalts cryſtallize, which cannot be inſiſted on in this place; one thing deſerves particularly to be remarked, that every ſalt in cryſtallizing, invariably aſſumes its own peculiar form. You may diſſolve common ſalt, or ſaltpetre, a thouſand times, and chryſtallize them as often by evaporating or cooling the water in which they are diſſolved, yet will you ſtill find the common ſalt will be conſtantly cryſtallized in the form of a cube, and the ſaltpetre in the form of a priſm; and if you examine with microſcope ſuch ſaline particles as are not viſible to the naked eye, you will obſerve theſe particles to be of the ſame ſhape with the larger maſſes. The definite figure appropriate to every particular ſpecies of ſalt, may admit a little variety from the accidental admixture of other bodies, or from ſome ſingular circumſtances attending the evaporation and cryſtallization of the ſolution; but theſe varieties are foreign to the nature of the ſalt, and are not greater than what attend almoſt every ſpecies of vegetables, and even of animals, from change of food and climate.

"Here a large field of inquiry opens to our view; and though it be better, as Seneca has it, *de re ipſa quærere quàm mirari*; yet all our attempts to inveſtigate the works of God are weak and ineffectual; we feel his interference every where, but we cannot apprehend the nature of his agency

To come now to the enſuing work. The firſt object of conſideration is the Pine and Grape-ſtove; and it muſt be admitted, that the original and principal object of an Hot-houſe conſiſts in the culture of the Ananas or Pine-Apple; but ſtill, if the Pinery be properly conſtructed, Vines may, at the ſame time, be propagated therein to great advantage.

I know there are are many perſons who diſſent from this mode of practice, and they found their opinions on the following objections:

FIRST, They ſuppoſe that Pine-ſtoves are improper for Vines, becauſe the Pine being a tropical plant, it naturally requires a greater degree of heat than the Vine can poſſibly bear.

SECONDLY, Becauſe it is uſual to train the Vines along the underſides of the rafters which ſupport the glaſs-frames, they ſuppoſe that their leaves, by contributing to darken the ſtove, muſt, conſequently, tend greatly to injure the crop of Pines.

"any where. A blade of graſs cannot ſpring up, a drop of rain cannot fall, "a ray of light cannot be emitted from the ſun, nor a particle of ſalt be "united, with a never-failing ſymmetry, to its fellow, without him: Every "ſecondary cauſe we diſcover, is but a new proof of the neceſſity we are "under of ultimately recurring to him, as the primary cauſe of every "thing."

THIRDLY, They alledge, and this is but too prevalent an opinion, that grapes produced in Pine-ſtoves are ſeldom ſo well flavoured as grapes from a Vinery.

To the firſt of theſe objections I here reply, by aſſerting that the Vine will bear the degree of heat proper for Pines, and that this is proved by daily experience. There is a Vine now (1789) growing in the Pinery at Welbeck, which has conſtantly produced good crops of grapes for more than twenty years paſt. Its roots are entirely within the houſe, and make annual progreſs in the Pine-pits, among the leaves of trees, which are uſed here inſtead of tan; and pleaſe to conſider, that in this mode of proceeding, the ſituations of the Pine and Vine are extremely different.

The Pine is ſituated in the lower part of the houſe, but the ſhoots of the Vine are trained immediately under the roof, and, conſequently, are greatly affected by the external air, eſpecially when ſuch air is admitted into the houſe. Beſides, let me add, that the Pines, being plunged in the tan-bed, receive a conſtant warmth from thence, and their roots are nouriſhed by its genial heat. But the whole ſyſtem of the fibres in the roots of the Vines being in the open ground on the outſide of the houſe, they are at all times expoſed to the weather, which muſt neceſſarily have a wonderful effect upon the whole plant at all ſeaſons of the year.

That

That the ſecond objection is of force, where the Vines in a Hot-houſe are under an injudicious management, muſt be admitted; but when their ſhoots are trained with propriety, and according to the method herein preſcribed, the Pines will rather be benefited than injured, by the kindly ſhade the Vine leaves will afford.

And as to the laſt objection, grapes, well perfected in Hot-houſes, are generally very rich; but it muſt be confeſſed that their ſkins are very often impregnated with a diſagreeable flavour: But I ſhall venture to affirm, that the cauſe of this defect moſt generally proceeds, either from the languiſhing ſtate of the Vine, the effect of inſects, or elſe from fumigations, or ſome ſimilar practice, made uſe of to deſtroy the various inſects that infeſt Hot-houſes; and, therefore, I inſiſt, firſt, that a plentiful admiſſion of free air in ſummer is as neceſſary for the Pine as the Vine. See ſection on air, &c. p. 59, in my Treatiſe on the Culture of the Pine, &c.

And ſecondly, that when air is properly and plentifully admitted into the Hot-houſe, and every other part of the management is conducted with propriety, grapes produced in Pine-ſtoves commonly prove well flavoured, and in a high ſtate of perfection.

The advantages to be gained by the new methods of propagating the Vine by ſeed, and by engrafting, appear very conſpicuous

ſpicuous in Theory: And I have now the pleaſure of informing my readers, that the event upon trial and practice has proved quite flattering and equally ſatisfactory.

My beſt endeavours, moreover, have not been wanting in obtaining new varieties of grapes from abroad: And I truſt that many of the ſpecies here enumerated, will be conſidered as a real and valuable acquiſition to this country.

It is poſſible that the mode of practice herein ſet forth may, in certain reſpects, be deemed by ſome as ſuperfluous. They may alledge that good grapes may be gotten by methods leſs expenſive. But let me tell them, that in order to obtain grapes in a ſupreme degree of perfection, in a country ſo ſituated as ours is, one ought to employ every expedient that may ſeem calculated to tend to advantage, and enſure ſucceſs.

And in reſpect of erecting buildings, either Vineries, or Pine and Grape-ſtoves, whatever may be the deſign intended, I moſt ſtrongly adviſe, that ſuch erections ſhould be well and ſubſtantially executed.

I did not originally intend to give an account of Vineyards in the following work, but conſidering that a treatiſe on the culture of the Vine would appear deficient without it, I reſolved to add the fourth book, expreſsly for the purpoſe of illuſtrating that ſubject; and I am willing to hope, that on account

account of the original hints there given, it will not be deemed the leaſt uſeful and important part of this treatiſe.

The Duke of Portland, after all his other indulgences, was pleaſed to give me free acceſs to his Grace's noble library at this place, which has enabled me to add many important obſervations in the *notes*, which cannot fail of being acceptable to the *reader*. The names of the authors conſulted will appear in the reſpective notes.

Here now, that I am drawing my preface to a concluſion, I muſt intreat the reader to permit me to make my acknowledgments, that I may not appear ungrateful to ſome of my living friends.—My warmeſt thanks are due to my much-eſteemed and truly-learned friend the Rev. Samuel Pegge, of Whittington, Derbyſhire, for his excellent *note* on the large bunch of grapes produced at Welbeck in the year 1781, inſerted in p. 41—alſo for his curious and important note in p. 186—and likewiſe for his further friendly aſſiſtance.

I feel myſelf under ſingular obligations to my worthy and learned friend the Rev. Mr. Michell, for his obliging communication of a new and eligible method of raiſing Vine-plants; and alſo for his important note on this ſubject, inſerted p. 53.

William Hanbury, Eſq; has my warmeſt thanks for having obligingly favoured me with an account of the ſurpriſing progreſs

greſs of ſome Vines at Kelmarſh in Northamptonſhire, during the courſe of laſt ſummer, as inſerted in p. 76.

The Rev. Mr. Philip Laurents has laid me under an obligation, by favouring me with an elegant account of an extenſive Vine now growing at St. Edmundſbury in Suffolk, p. 179.

My kindeſt acknowledgments are due to my much-eſteemed, worthy, and truly ingenious friend Haman Rooke, Eſq; for his elegant perſpective to the plate of the ſection of a hill for the growth of Vines in England.

I am alſo particularly indebted to my much-honoured and learned friend, the Rev. Dr. Kaye, Dean of Lincoln, for the elegant drawing of an enormous Vine, now growing at Northallerton in Yorkſhire, taken ſome years ago, when that ſurpriſing tree was in a flouriſhing ſtate, by the correct and inimitable hand of Mr. Grimm.

I wiſh to convey to Mr. Baſire my acknowledgment of the accuracy and elegance of the engravings executed by him, and which make an uſeful and ornamental part of this work.

Laſtly, my moſt grateful acknowledgments are due to my very excellent, worthy, and truly-learned friend Dr. A. Hunter. His obliging and aſſiduous attention to the work during the time it was in the preſs, has greatly contributed towards rendering it more worthy of the public approbation.

Welbeck, May 1, 1789.

OF THE

CULTURE

OF THE

VINE, OR GRAPE TREE.

BOOK I.

THERE are ſeveral ſpecies of the Vine, but I ſhall only take notice of the principal ſort, *(Vitis Vinifera)* which is ſo highly and juſtly eſteemed for its moſt excellent and valuable fruit[a]. Of this there are a numerous

A variety,

[a] VITIS VINE.

GENERIC CHARACTER.

CALYX. *Perianthium* five-toothed, ſmall.

COROLLA. *Petals* five, ſimple, ſmall, ſoon falling off.

STAMINA. *Filaments* five, awl-ſhaped, and ſomewhat ſpreading, falling off; *Antheræ* ſimple.

PISTILLUM. *Germen* egg-ſhaped; Style none; *Stigma* blunt-headed.

PERICARPIUM. *Berry* roundiſh, large, of one cell.

SEMINA. Seeds five, boney, heart and ſomewhat top-ſhaped; contracted at the edge, nearly two-celled.

ESSENTIAL CHARACTER.

Petals cohering at the baſe, withering. *Berry* five-ſeeded.

SPECIFIC CHARACTER.

VITIS *Vinifera*. VINE *wine-yielding*.

V. *Leaves* lobed, ſinuous, naked. *Tendrils* oppoſite to the leaves, bearing the *fruit* and *flowers* in cluſters.

A native of the temperate climates in the four parts of the world.

The Vine, according to the Sexual Syſtem of Botany, belongs to the claſs and order *Pentandria Monogynia*, the flowers having five ſtamina and one ſtyle.

variety, which are exceedingly different in many particulars, but eſpecially in the ſhape, colour, and flavour of the grapes.

As new kinds of grapes are conſtantly raiſed from ſeed, the Vine admits of an almoſt infinite variety, which are all ſuppoſed to be the progeny of one mother ſpecies.

I have, for a long ſeries of years, exerted my utmoſt endeavours in obtaining different varieties of grapes from various parts of the globe; and I flatter myſelf, that many of the ſorts will be deemed real acquiſitions to this country. I ſhall not, however, enumerate all the varieties that compoſe the liſt of grapes now growing at Welbeck, (which conſiſts of above 100 ſorts) as ſome of them have not yet borne fruit, and many others are eſteemed only on account of being proper for making wine; ſome of the ſorts, moreover, are ſo much alike, that no diſtinct difference of ſpecies is eaſily to be diſcovered. The following ſorts, however, appear to be diſtinct ſpecies; and, among them, are grapes of the firſt and beſt quality. ‖§‖

1. WHITE MUSCAT OF ALEXANDRIA.

The berries of this ſpecies are large and oval; and, when perfectly ripe, are of a fine amber colour. The ſkins are thick, and the fleſh, or pulp, hard, and not very juicy, but of a high muſky

‖§‖ An Aſteriſm (*) marks the proper ſorts for a Hot-houſe.—A Dagger (†) for a Vinery.—A Double Dagger (‡) for a common Wall.

muſky flavour. The berries hang looſely, and compoſe long well-formed bunches.

This grape is in great eſtimation, and is, at preſent, more generally planted in Hot-houſes than any other ſort. *

2. BLACK DAMASCUS.

The berries of this ſpecies are large, round, and of a fine black colour; the ſkin thin, and the fleſh delicate, rich, juicy, and of an exquiſite flavour.

The ſame bunch commonly conſiſts of berries of different ſizes; the ſmall berries are without ſtones, and the large ones contain only one in each berry. This, although a late grape, is a moſt excellent and very valuable ſort. *

3. BLACK GRAPE FROM TRIPOLI.

This grape ſeems nearly allied to the former ſpecies; but the bunches are always compoſed of large berries of an equal ſize, and with one ſtone in each. This circumſtance of the berries being equal in ſize, renders the bunches of a more agreeable appearance. The foliage in both is exceedingly beautiful in the autumn, and very ſimilar. This may be reckoned a truly valuable grape. *

4. ALEPPO GRAPE.

This is a middle-ſized roundiſh grape, with a thin ſkin and delicate juicy fleſh, of an exquiſite vinous flavour. The colour is commonly very various. I have ſeen on the ſame bunch

ſome berries quite white, others entirely black, but the major part are curiouſly ſtriped with black and white. Sometimes a berry will be one half white and the other half black: But what appears moſt remarkable is, that the colours do not intermix, but are divided by ſtraight lines, as if painted. The leaves of this ſort are in the autumn very curiouſly ſtriped, with red, green, and yellow, ſomething ſimilar to the Aleppo lettuce. *†

5. RED GRAPE FROM SYRACUSE.

This is a very large grape, of a red colour, and of an oval figure, ſomewhat irregularly formed. The berries hang rather looſely on the bunches, which are pretty large. This noble grape is but little known in this country. *

6. LE COEUR GRAPE, OR MOROCCO GRAPE.

This ſpecies produces large berries, in figure ſomewhat heart-ſhaped, and of a tawny grizzly colour. The bunches are often compoſed of unequally-ſized berries, ſome of them being exceedingly large. Theſe never contain more than one ſtone a piece, and the leſſer-ſized berries are always without ſtones. The foot-ſtalks of the berries are ſhort, and ſingularly large, differing from moſt other ſorts. This is a much-eſteemed grape, and is very ſcarce. *

7. GOLDEN GALICIAN.

The berries of this ſpecies are large, and of an oval figure; the fleſh hard, but of a tolerable flavour. Theſe, together with the foot-ſtalks, are of a light yellow colour. *

8. BLACK MUSCADEL.

Of this ſpecies the berries are large, oval, and of a black colour; the ſkin thin, with a delicate juicy fleſh.

The ſame bunch contains berries of different ſizes, ſome of them very large and long, but ſomewhat compreſſed and flat at the ends. The leaves of this grape change in autumn to a beautiful ſcarlet. *

9. RED MUSCADEL.

The berries of this ſort are large, oval, and of a beautiful red colour; the ſkin is thick and the fleſh hard, ſomething like the raiſin grape. The bunches frequently arrive to ſix or ſeven pounds, and are moſt elegantly formed of berries of an equal ſize. This is one of the lateſt grapes. The leaves change in autumn to a beautiful red and green. *

10. WHITE GRAPE FROM ALCOBACA.

This has a large oval white berry, with a thin ſkin and juicy fleſh. The bunches are large and long, without ſhoulders.

This

This ſpecies, with many others, was ſent me from Portugal by my much-eſteemed friend, Gerrard de Viſme, Eſq.*

11. WHITE FRONTINAC.

The berries of this ſpecies are round, of a moderate ſize, and of a greeniſh yellow, and compoſe long unſhouldered bunches. *†‡

12. GRIZZLY FRONTINAC.

The berries of this grape are ſomewhat larger than the former, are round, and their colour brown and red intermixed with yellow. Both theſe ſorts of grapes poſſeſs a high, muſky, perfumed flavour. *†

13. BLACK, or PURPLE FRONTINAC.

The berries of this ſpecies are black, but when produced under glaſs are generally of a dark purple colour, are moderately large, round, and of a moſt excellent flavour. They compoſe very long bunches. This has been hitherto generally called the Red Frontinac, and is one of our very beſt grapes. I had it from the Cape of *Good Hope* by the name of Black Conſtantia. *†

14. BLUE, or VIOLET FRONTINAC.

This has a ſmall black berry, powdered with a fine blue or violet bloom, and is of an exalted vinous flavour. The berries grow cloſe upon the bunches, which are very ſmall. This is commonly called the Black Frontinac, but the French name it *Muſcat Violet*. †‡

15. RED

15. RED FRONTINAC.

The berries of this fruit are of a moderate ſize, round, and of a fine red colour, and high flavour. The berries grow cloſe upon the bunches, which are of a moderate ſize. I muſt beg leave to obſerve, that I have only ſeen two or three bunches of this grape, produced here laſt ſummer, from a plant (which came from France the preceding year) growing in a pot about a foot diameter.

It is undoubtedly the *true* Red Frontinac, which has induced me to change the names of the two foregoing ſpecies. *†

16. WHITE SWEETWATER.

This is a very large round white grape. The berries grow cloſe on the bunch, which is of a moderate ſize, and are replete with an agreeable juice. The ſkin and fleſh of this grape are more delicate than of any other ſort. In ſome ſituations, the berries on the ſides of the bunches, next the ſun, are clouded with ſpots of a ruſſet colour, and they are then generally moſt admirable. This grape is propagated in the forcing-houſes in *Holland*, in preference to any other ſort. It is by the Dutch called *Parel druyf*. *†‡

17. BLACK SWEETWATER.

The berries of this ſpecies are much ſmaller than the former, are black, grow in ſmall ſhort cloſe bunches, and are replete with a very ſweet juice. The ſkin being thin, and very

very ſubject to crack, it is an improper grape to be propagated in a Hot-houſe. †‡

18. BLACK HAMBURGH.

The berries of this ſpecies are large, inclining to an oval figure, and of a black colour. They hang looſely on the bunch, and compoſe well-formed handſome bunches.

The ſkin is thick and the pulp hard; but, notwithſtanding theſe defects, it is a very valuable grape, being a good-flavoured fruit and a plentiful bearer.*†

19. RED HAMBURGH.

The berries of this ſort are of a dark red, with thin ſkins and juicy delicate fleſh. The ſize and figure of both the berry and bunch are nearly like the former. It is ſometimes called the Gibraltar Grape.*†

20. WHITE HAMBURGH.

This has a large oval berry, with a thick ſkin and hard fleſh. As this ſpecies is a very plentiful bearer, and forms large bunches, it is much admired by ſome, but is not ſo valuable as either of the two preceding kinds. It is ſometimes called the *Portugal* Grape.*

21. MALVOISE.

The berries of this ſpecies are ſmall, rather inclining to an oval figure, and of a brown colour. The ſkin is thin and the

the fleſh delicate, replete with a vinous juice. As the berries are powdered with a blue bloom, it is ſometimes called the Blue Tokay.*†

22. GENUINE TOKAY.

This is a white grape. The berries incline to an oval figure, and grow rather cloſe on the bunch, which is of a moderate ſize. The ſkin is thin and fleſh delicate, abounding with a very agreeable juice. This ſpecies is very diſtinguiſhable by the foliage, the underſide of the leaf being covered with a fine ſoft down, having the appearance of ſattin. This ſpecies was ſent to his Grace the Duke of Portland, from *Hungary*, ſome years ago.*†

23. LOMBARDY.

This has a large berry, inclining to an oval figure, of a beautiful flame colour. The bunches are regularly formed with ſhoulders, and frequently arrive to the weight of ſix or ſeven pounds. The leaves are much more divided than moſt other ſorts, and the upper ſurface is of a deep green colour. This is by ſome called the Rheniſh Grape, and by others the Flame-coloured Tokay.*†

24. SMYRNA GRAPE.

This has a large red-coloured berry of an oval figure, with thin ſkin and delicate juicy fleſh. It forms long bunches with ſhoulders looſely connected. The leaves in autumn die with

purple edges. This is a good grape, though but little known in this country.*†

25. BRICK GRAPE.

The berries of this ſpecies are ſmall, inclining to an oval figure, and of a pale red or brick colour. They grow cloſe on the bunch, which is very ſmall. This is a very ſweet grape, but not much eſteemed.†‡

26. BLACK SPANISH OR ALICANT.

The berries of this ſpecies incline to an oval ſhape, are moderately large and black, and form exceeding long unſhouldered bunches. The ſkin is thick, and the ſeeds uncommonly large. The fleſh is ſoft, juicy, and of an agreeable flavour. The leaves in autumn are beautifully variegated with red, green, and yellow. This is a pretty good fruit, and is ſometimes called the Lombardy Grape.*†

27. WHITE MUSCADINE, OR CHASSELAS.

This has a round white berry, is moderately large, with a thin ſkin, and delicate juicy fleſh. The bunch is well formed, and of a pretty good ſize. This ſpecies is generally propagated againſt common walls; and as the fruit is conſtantly eaten before it is well matured, it is rather in diſeſteem: But ſtill, when well perfected, it is an exceeding fine grape. The ſame obſervation might have been made on the White *Sweetwater*, with equal propriety.*†‡

28. BLACK MUSCADINE.

The berries and bunches of this ſpecies are both ſomewhat ſmaller than the preceding. This is a very prolific grape, and makes a fine appearance, on account of the black berries being powdered with a bluiſh bloom; but the fleſh is not ſo delicate and juicy as the former. I procured a plant of this grape from *Holland* by the name of *Frankendale*.*†

29. ROYAL MUSCADINE, OR *D'arboyce.*

This has a round white berry, of a moderate ſize, a thin ſkin, and a juicy ſoft fleſh. The bunches are generally exceeding large, ſometimes arriving to ſix or ſeven pounds. This ſpecies is very diſtinguiſhable by the wood and foliage, generally growing remarkably groſs and ſtrong.*†

30. MALMSEY MUSCADINE.

This ſeems nearly allied to the preceding, but the bunches and berries are ſomewhat ſmaller, and the juice of a higher flavour, being remarkably ſweet. However, as I have only ſeen the fruit of this ſort from a plant growing in a pot, an allowance for the ſize of the bunches ſhould be made.*†

31. CLARET GRAPE.

The berries of this ſpecies are ſmall, black, and inclining to an oval figure; they grow cloſe, and form ſmall bunches. The juice is of a blood-red colour, of a harſh taſte, excepting

the grapes are perfectly matured, and then it may be conſidered rather as an agreeable delicate fruit. The leaves change from green to a ruſſet-red early in ſummer, and die a deep red in autumn.*†

32. SYRIAN GRAPE.

The berries are white, large, and of an oval figure; the ſkin is thick, and the fleſh firm and hard; the bunches well formed, and enormouſly large. Now, though this is generally conſidered as a coarſe fruit, it has properties that ought to introduce it into every large collection, and eſpecially the Hothouſe. It is very prolific, and the bunches commonly grow very large, making a moſt noble appearance, and, when well perfected, may be called a very eatable fruit; to which I may add, that they may, without difficulty, be kept many weeks longer than any other ſort. I have often had them in good perfection in the month of January, and ſometimes even in February.*

33. MILLER'S BURGUNDY.

The berries are ſmall, rather inclining to an oval figure, are black, and grow cloſe on the bunch, which is commonly ſhort and ſmall. The ſkin and fleſh are delicate, poſſeſſing a ſweet and pleaſant juice. The leaves are diſtinguiſhable from moſt others by a hoary down, eſpecially when young, being then almoſt white.†‡

34. SMALL BLACK CLUSTER.

The berries and bunches of this ſpecies are little different from the former, but the leaves have leſs down, and are ſomewhat ſmaller. This is a delicate ſweet fruit, and is ſometimes called the Burgundy Grape.†‡.

35. LARGE BLACK CLUSTER.

The berries of this are larger, and grow more oval than the two former ſpecies, are black, and not ſo delicate, the juice being of a harſh and rough taſte. The leaves in autumn, when dying, are of a beautiful bright ſcarlet. This ſpecies was ſent me from Liſbon, and I was aſſured it is the identical grape of which red Port wine is made.†

36. WHITE MORILLON.

This has an oval white berry, of a moderate ſize, with thin ſkin and delicate juicy fleſh. It grows cloſe on the bunches, which are ſmall. The leaves are ſoft, being greatly covered with down on the underſide, ſomething ſimilar to the genuine Tokay grape, to which it appears nearly allied.

37. EARLY BLACK JULY GRAPE.

This has a ſmall black round berry; the bunches alſo are ſmall, but it is a prolific bearer, and comes to the table at an early ſeaſon, even without fire heat.†‡

38. CAT'S GRAPE.

This has a ſmall oval berry, of a greeniſh white colour, with a thin ſkin and ſoft juicy fleſh. The berries grow cloſe, forming ſmall bunches. The taſte of this fruit, before it is quite matured, is exceedingly diſagreeable; but, when perfectly ripe, is very ſweet, and pleaſing to ſome palates.*†

39. BLACK RAISIN GRAPE.[b]

The berries of this ſpecies are large, oval, and black, with a thick ſkin and a hard firm fleſh. It forms long handſome bunches.*

40. WHITE

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[b] "Raiſins are of two ſorts; thoſe which are called ſun-raiſins are made thus: When the grapes are almoſt ripe, the ſtalk is cut half through, ſo that the ſap may not penetrate farther, but yet the bunch of grapes may remain ſuſpended by the ſtalk. The ſun, by darting on them, candies them, and when they are dry they are packed up in boxes.

"The ſecond ſort is made after the following manner: When the Vines are pruned, the tendrils are preſerved till the time of vintage; a great fire is made, wherein thoſe tendrils are burnt, and in the lye, made of their aſhes, the newly-gathered grapes are dipt,* after which they are expoſed to the ſun to dry, which renders them fit for uſe."—*Travels through Portugal and Spain, in* 1772 *and* 1773, *by Richard Twiſs, Eſq; F. R. S. p.* 334.

* Mr. Swinburne, in his travels through *Spain*, p. 208, informs us, that the raiſins dried upon the coaſt of *Valencia* are dipped in a lye of *wine* and aſhes.

The

40. WHITE RAISIN.

The properties of this grape are nearly ſimilar to the preceding, but the berries are white.*

41. DAMSON GRAPE.

The berries of this ſpecies are very large, oval, and of a beautiful purple colour. They grow looſe on the bunch, which

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The ſame ingenious author ſays, p. 167, "Immenſe are the hoards of all ſpecies of dried fruits, ſuch as figs, raiſins, plumbs, &c. They have alſo the *ſecret* of preſerving grapes, ſound and juicy, from one ſeaſon to another."

It is much to be regretted that this Gentleman could not procure and import the above moſt invaluable *ſecret*.

I have conſtantly kept grapes a long time by the following method: Before the autumnal froſts have killed the Vine leaves, let the bunch with the ſhoot be carefully cut off the Vine. Then put the lower end of the ſhoot into a bottle filled with water: Hang up the bottle with the ſhoot and bunch in a warm room. A Green-houſe is a very proper place.

Only two or three joints of the ſhoot above the bunch ſhould be left, but a ſufficient length below, to reach the bottom of a quart bottle, will be required.

The bottle ſhould be filled with freſh water every twelve or fourteen days; and at the ſame time a thin ſhaving ſhould be cut off the bottom of the ſhoot, whereby the pores will be made to imbibe the water with greater facility.

Grapes produced in Pine-ſtoves require to be cut at the pruning ſeaſon, viz. in December.

By this method I have often kept grapes freſh and good till the middle of February.

which is large. The leaves of this grape are large, and more thick and ſucculent than thoſe of any other ſort, and have ſomething of the appearance of green leather.*

42. EARLY WHITE GRAPE FROM TENERIF.

The berries of this ſpecies are round, white, and of a moderate ſize, with thin ſkins, and delicate juicy fleſh of an extraordinary ſweetneſs. The berries and bunches much reſemble the common Muſcadine, to which it appears to have a near affinity.†‡

43. ST. PETER'S GRAPE.

This has a pretty large berry, nearly globular in figure, and of a black colour; the ſkin is thin, and the fleſh very delicate and juicy. This Vine produces large bunches, but as the berries are very ſubject to crack, it is not generally planted in forcing-houſes. The leaves are much more divided than thoſe of moſt other ſorts.†

44. BLACK GRAPE FROM PALESTINE.

This appears nearly ſimilar to the preceding. But I have only ſeen two bunches of this grape, the product of a plant growing the laſt ſummer in a pot, and engrafted laſt ſpring; and though its ſituation was in the Hot-houſe, not a ſingle berry cracked in either of the bunches; it may probably, therefore, be a diſtinct ſpecies.*†

45. CIOTAT.

45. WHITE PARSLEY-LEAVED GRAPE, OR CIOTAT.

This is a ſpecies of the parſley-leaved grape. The berries are round, white, of a moderate ſize, with thin ſkins and delicate juicy fleſh, which is very ſweet, but not of a vinous flavour. The bunches are of a pretty good ſize, almoſt ſimilar to the White Muſcadine. The leaves are finely divided, differing from any other ſort.—There is a ſpecies of the Parſley-leaved Grape which produces *red* berries.†

46. BLACK LISBON.

This has a large globular berry, black, thin-ſkin'd and juicy. It has alſo large-ſhouldered bunches, which not a little reſemble the Black Hamburgh. It is a pretty good grape, but ſcarce in this country.*†

47. GREEK GRAPE.

The berries of this ſpecies are of a moderate ſize, rather inclining to an oval figure, of a bluiſh white colour, and grow cloſe, forming moderate-ſized handſome bunches. The leaves grow on very ſhort foot-ſtalks, and bear a reſemblance to thoſe of the *Sweetwater*. It is a delicate and juſtly-eſteemed fruit.*†

48. WHITE CORINTH GRAPE.

This has rather a ſmall white round berry, with a thin ſkin, and very delicate juicy fleſh, of an agreeable flavour. The bunches too are rather ſmall. The berries, when perfectly ripe, are tranſparent, ſo that the ſeeds appear very diſtinctly.†

49. WHITE MUSCAT, from *Lùnel.*

The berries of this ſpecies are large and oval, and, when perfectly ripe, are of a fine amber colour, ſometimes clouded with brown or ruſſet, eſpecially on the ſide next the ſun. The ſkin is thin, and the fleſh delicate, replete with a vinous juice. As this grape is a very plentiful bearer, and forms pretty large bunches, it may juſtly be deemed a valuable ſort, though at preſent but little known in this country.*†

50. CORNICHON.

This is a remarkable-formed grape. The berries are above one inch and a half long, their breadth not half an inch. They taper from the ſtalk, (but not in a regular manner) and end in a blunt point, according to the French, ſomething like a horn: But its figure is more like the long end of a ſmall fiſh's bladder. The berries are white, with a thick ſkin and a firm ſweet fleſh.*

I might add to the foregoing liſt, two or three ſeedling grapes that have borne fruit; one of them is the produce of the Black Frontinac, impregnated by the White Sweetwater, and may be conſidered as a valuable ſort. The berries are black, like its parent, but the bunches are compoſed of unequally-ſized berries, like the Sweetwater, and ripen early in the ſeaſon.

I have not attempted to place the various ſorts in the foregoing liſt, according to the due order of their ripening, becauſe the

the late kinds are the fitteſt to be propagated in the Hothouſe, which in this work is to be conſidered as the firſt object.

It might, by ſome, perhaps be expected that I ſhould announce the flavour of every ſort of grape here mentioned and deſcribed: But I am very reluctant as to that particular, as perſon's palates are ſo very various; and I have frequently found and obſerved, that many ſorts of grapes, which have by ſome been highly commended, have, by others, been greatly diſapproved.

I ſhall here beg to remark, that I have obſerved that the leaves of white grapes, in general, when mature, conſtantly change to a yellow colour, and are never in the leaſt tinged either with purple, red, or ſcarlet. The leaves of the Claret Grape change to a dark purple and ruſſet green early in the ſeaſon. Thoſe of the Blue Frontinac and Black Muſcadine, change late in the ſeaſon to a beautiful ſcarlet and yellow, intermixed.

The leaves of the Aleppo Grape are curiouſly ſtriped with red, green, and yellow: The Muſcadel, Smyrna, Morocco, Black Damaſcus, Grizzly Frontinac, and the Black Spaniſh or Alicant, are alſo exceedingly beautiful.

The leaves of the pale red and Grizzly Grapes are not always tinged with red; but whenever the leaſt tinge of red, purple, or ſcarlet appears on the leaves of the vine at the time of their maturation, it is a certain criterion that the grapes will be either of a grizzly, a red, or a black colour. By a ſtrict attention to this remark, a perſon may be enabled to aſcertain the colour of the grapes of Seedling Vines at the end of the firſt year.

Although the ſituation and climate of this country be too unfavourable for bringing the beſt kinds of grapes to perfection in a natural way, yet, by artificial means, we are enabled to carry even the lateſt ripening ſorts to almoſt as high a degree of perfection as in any part of the globe.

The moſt certain methods of obtaining grapes in perfection in this country, are either to propagate the Vines in pine ſtoves, or againſt flued walls covered with glaſs, commonly called Vineries.

In ſome ſeaſons there are many kinds of early grapes brought to a tolerable degree of maturity againſt common walls; but even in a propitious ſeaſon, the beſt ſorts of grapes thus produced are of little value; whereas even the lateſt ſorts, when propagated in a pine ſtove or vinery, ſeldom fail of producing crops of well-flavoured grapes.

The

The management and method of training Vines in the Hot-houſe being very different from that of propagating them in a vinery, it will be proper and expedient to treat the two modes ſeparately.

ON

ON THE

MANAGEMENT

OF THE

VINE IN THE HOT-HOUSE.

IN the firſt place, ſituation and ſoil are maturely to be conſidered. Every Hot-houſe ſhould either be built on a dry ſoil, or where the ſituation is capable of being made ſo; becauſe it is abſolutely neceſſary that the pine pits ſhould be perfectly dry: And theſe are generally to be ſunk about four feet below the ſurface of the circumjacent ground, on the outſide of the building. There ſhould be a drain in the front of the ſtove to carry off the water that falls from the roof; and this drain ſhould be as low as the foundation of the building, and cloſe adjoining to its front wall.

If the ground be wet or ſpringy, the ſoil either a barren ſand or cankered clay, it will be requiſite to uſe all neceſſary expedients to prevent the roots of the Vine from entering into them; and as they are to be planted immediately over the drain adjoining the front of the Hot-houſe, it will be indiſpenſably neceſſary alſo to make the drain perfectly ſecure both on the top and ſides.

Parallel

Parallel to the drain adjoining the front of your Hot-houſe, another drain ſhould be made at the diſtance of about 18 or 20 feet, and this ought to be ſunk ſix or eight inches below the level of the former drain; the bottom floor of the vinery will then admit of an eaſy deſcent, ſo that the water may readily be drawn off from the roots of your Vines.

When the ſoil comes under any of the above deſcriptions, a bottom floor ſhould be made to prevent the Vine-roots from penetrating it: This floor muſt be made of ſuch materials as chippings of ſtone, coarſe gravel, broken bricks, &c. and theſe muſt be laid quite as low as the bottom of both the drains, and to the thickneſs of eight or ten inches. They ſhould be well beaten together and made ſmooth.

Over theſe materials, or foundation, there ſhould be put a thin layer of fine loamy ſoil, quite free from ſwarth or ſtones. This ſhould be well watered, and worked over with a ſpade till it is quite ſoft, ſo as to have the appearance of a fluid maſs; for then it will entirely fill up the chinks in the under-bed of ſtone, &c. and alſo form a covering, and unite with it ſo thoroughly, as to make and compoſe a firm bed, almoſt as impenetrable as a rock.[c]

In

[c] This method of tempering ſoil is in general practice with engineers and perſons employed in making navigable canals or large pieces of water. It is by them termed "puddling," and is deemed the beſt expedient hitherto found out to render ground water-proof.

In many places Hot-houſes are built where the ſoil is of ſo unfavourable a nature, that it would be next to impoſſible to have Vines in perfection without the above contrivances and precautions; for when the ſoil is wet and ſpringy, as ſtated above, is a ſtrong clay, or otherwiſe unkindly, the Vine-roots by penetrating deeper than the ſun's influence, will imbibe crude particles, which will not only tend to render the Vine unfruitful, but alſo impregnate its ſmall produce of grapes with a diſagreeable flavour: But when the above directions are ſtrictly attended to, there will be a certain ſpace of ſix or eight yards in breadth, and the entire length of the ſtove, made perfectly ſecure from all noxious and heterogeneous matter: Therefore the next important object will be a conſideration of a proper ſoil or compoſt.

As the Vines in the Hot-houſe at Welbeck have been remarkably fruitful and vigorous, I ſhall beg leave to recommend the ſame kind of compoſt-mould which I make uſe of there, viz. one-fourth part of garden mould, (a ſtrong loam); one-fourth of the ſwarth or turf from a paſture where the ſoil is a ſandy loam; one-fourth of the ſweepings and ſcrapings of pavements and hard roads; one-eighth of rotten cow and ſtable-yard dung mixed; and one-eighth of vegetable mould from reduced and decayed oak leaves. Theſe are the ſeveral and reſpective proportions. The ſwarth ſhould be laid on an heap, till the graſs-roots are in a ſtate of decay, and then turned over and broken with a ſpade; let it then be put to the other materials, and the whole

whole worked together, till the ſeparate parts become well and uniformly mixed and incorporated.

If this buſineſs were to be done previous to the building of your Hot-houſe, it would be the better; but if time will not allow of that, it would be adviſable to bring the above-preſcribed materials directly to the ſpot, and there to mix and mingle them well and ſufficiently together, by working them over in the manner of trenching. I will not take up the reader's time in the explanation of any kind of proceſs generally known: In the preſent caſe, therefore, it may ſuffice to ſay, that before the Vines are planted, it will be perfectly neceſſary that all the ingredients above-mentioned ſhould be completely combined, and ſo thoroughly mixed, as to conſtitute a maſs perfectly uniform and homogeneous.

Let us now ſuppoſe the compoſt-mould to be ready upon the ſpot. There let it be raiſed above the upper margin of the drain adjoining the front wall of the ſtove, to the thickneſs of two feet and ſix inches. The whole ſpace between the two drains muſt alſo be raiſed to rather above that level. As the preparing and finiſhing the ground in queſtion leads to an important object, and as it ſhould be covered with gravel, and lie in an undiſturbed ſtate for ſome time after it is planted, I am deſirous of being a little more explicit reſpecting the formation of your floor or bed.

I have already obſerved that the floor has a fall or deſcent of ſix or eight inches, inclining to the South; and here I would recommend, that the ſurface of the ground upon it ſhould, when finiſhed, be reverſed, that is, that the part at ſome diſtance from the Hot-houſe ſhould be raiſed five or ſix inches above the level of the ground immediately adjoining the ſtove. The ground at each end ſhould alſo be brought to the ſame height. In ſhort, the ſurface of the whole ſhould have an eaſy fall of two or three inches to a certain point, where a grate ſhould be fixed, to take off the water that falls from the roof of the Hot-houſe. About the middle of the front wall will be the moſt convenient place for this purpoſe, as the ground at each end may be raiſed to have an eaſy fall into it. The grate muſt be laid in a groove cut two inches deep in a ſmooth ſtone; and a ſecond groove, one inch and a half deep muſt be cut round the former. The intent of this latter groove is to receive a board, which muſt be made to go in and fit very cloſe, ſo as to afford an opportunity of floating the ground in front occaſionally: But of this I ſhall have occaſion to ſpeak more at large hereafter. The ſtone I here ſpeak of muſt be laid immediately over the drain, adjoining the front wall of the ſtove, and raiſed about two feet three inches above the top of the ſaid drain. The ground, including a thin coat of gravel, of about two inches thick, muſt be laid perfectly even with the top of the ſtone, which is the central point for drawing off the water from the ſurface of the whole.

The

The ground ſhould be made complete ſome months before it is capped with gravel, as it will ſettle very conſiderably; and, during the time of ſettling, boards ſhould be laid over it for perſons to walk upon, when they are to give air to the Hot-houſe, &c. Since, otherwiſe, the ground would be trodden down unequally by their going over it. Your ground being now complete, by allowing proper time to ſettle, let the whole of the ſurface be pointed over with a ſpade to the depth of three or four inches; and at the ſame time add freſh compoſt to make up the deficiency of its ſettling. Then tread it firm and rake it ſmooth, and lay the gravel about two inches thick upon every part, except the very places where the Vines are to be planted. Tread alſo the gravel and rake it ſmooth; after which a light roller ſhould be run over it, and thus the whole buſineſs of the preparation will be finiſhed. However, I ſhall juſt add, that if the gravel were made fine, and afterwards diveſted of the ſandy particles, which may eaſily be done by twice ſcreening or ſifting, it would make the walk in the front of the Hot-houſe both neater and better; for when the gravel is of a ſandy nature, it is not only inclinable to grow ſoft in a wet ſeaſon, but the ſmall particles of it are alſo liable to be blown upon the roof of the Hot-houſe in dry windy weather.

It may ſeem unneceſſary to obſerve, that as the depth of the mould adjoining the front wall of the ſtove is two feet ſix inches, and the depth at the South drain three feet ſix inches,

the whole will run at the medium depth of one yard: And as the breadth of the floor, eighteen feet, and the Vines ſtanding at three feet ſix inches apart, the diſtance between the rafters, each plant will occupy, at an average, a ſpace containing ſeven ſuperficial yards, and, conſequently, as many cubic yards of compoſt.

Having thus gone through with the preparation of the ground where the ſoil and ſituation are both unfavourable, I ſhall now endeavour to give a few hints that may be uſeful, when either of theſe articles are differently and better circumſtanced.

A garden, and conſequently the Hot-houſe, is ſometimes ſo happily ſituated in regard to ſoil, that it ſeems, by nature, adapted to the growth of the Vine.[d] The beſt ſoil, in my apprehenſion,

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[d] The following extract from Virgil, on this topic, will be deemed neither unapplicable nor diſagreeable to the candid reader:

The nature of their ſev'ral ſoils now ſee,
Their ſtrength, their colour, their fertility;
And firſt for heath, and barren hilly ground,
Where meagre clay and flinty ſtones abound;
Where the poor ſoil all ſuccour ſeems to want,
Yet this ſuffices the Palladian plant.
Undoubted ſigns of ſuch a ſoil are found,
For here wild olive-ſhoots o'erſpread the ground,
And heaps of berries ſtrew the fields around.

But

prehenſion, and indeed the ſoil, in which I have known the Vine to proſper in the moſt ſuperlative degree without artificial aid, was a kind of rich ſandy loam, intermixed with thin beds of materials like jointed ſlate, or ſtone, ſo very ſoft in its nature as almoſt to be capable of being crumbled between the fingers. The roots of the Vine delight in theſe beds of loam.

I have been more particular in the above deſcription, on a ſuppoſition that ſpots of ſuch kindly materials may ſometimes be found; and whenever it ſo happens, I would, by all means, recommend a plentiful uſe of ſuch ſoil in preference to any other, and eſpecially for the part below; for even in the former caſe of the unfriendly ſoil, the Vines would poſſibly ſucceed ſtill better with a layer of this ſort between the compoſt-mould and bottom floor.

When

But where the ſoil, with fat'ning moiſture fill'd,
Is cloth'd with graſs, and fruitful to be till'd:
Such as in chearful vales we view from high;
Which dripping rocks with rolling ſtreams ſupply,
And feed with ouze; where riſing hillocks run
In length, and open to the Southern ſun;
Where fern ſucceeds, ungrateful to the plough,
That gentle ground to gen'rous grapes allow.
Strong ſtocks of Vines it will in time produce,
And overflow the vats with friendly juice;
Such as our prieſts in golden goblets pour
To gods, the givers of the chearful hour.

Dryden's *Virg. Georg.* ii.

When either a Pine and Vine Stove, or a Vinery, are intended to be made, and the ſoil happens to be ſuch as has been deſcribed, or ſimilar to it, and eſpecially if the bottom be a dry bed of ſtrong gravel, a kind of ſlate ſtone, or rocky, an artificial floor in either caſe will be unneceſſary, ſince the pine pits need not then be ſunk below the natural ſoil, as in the common method, but raiſed above it. The ground on the outſide of the building muſt afterwards be brought up to a convenient level, and it will then form a kind of terras or baſtion. By this means the roots of the Vine will be benefited in a double reſpect, both by an additional ſoil, and by having the natural one for its bottom or floor.

I do not in all caſes recommend the various proportions exactly, for making the foregoing compoſt, but would adviſe, nevertheleſs, that each be varied in a greater or leſs degree, according to its quality. Nay, it ſometimes may be found neceſſary to ſubſtitute a ſoil ſtill different from either of the foregoing. As when, for inſtance, a garden ſoil happens to be rich, ſtrong, and inclinable to clay, and when a ſandy loam cannot conveniently be had; for in ſuch a caſe, common ſand, or rather the reduced ſwarth or turf from a ſandy ſoil, although poor in its nature, will not only correct, but greatly improve it, by opening its pores, and rendering it light, and thereby making the paſſage more eaſy for the progreſs of the roots of the Vine. It appears a contradiction in terms, I confeſs, to ſay that a good ſoil will admit of being improved by a mixture with

with a bad one, but yet ſo it is, ſince although you may conceive the primogenial ſoil to be ſufficiently good and proper for the purpoſe,[e] it is, nevertheleſs, evinced by experience, that it will admit of improvement, and will be much benefited by having the various ſoils above-mentioned judiciouſly mixed and well worked together.

As the vegetable mould from decayed leaves, which I juſt mentioned above, cannot always be obtained, by reaſon that the leaves require to lie two years before they become ſufficiently putrid and reduced; it therefore may ſometimes be neceſſary to ſubſtitute ſome other ingredient in lieu of this part of the compoſt; wherefore it may not be inexpedient to point out the proper ſuccedanea.

Rotten wood reduced to a fine mould, ſuch as is often found under faggot ſtacks; the ſcraping of the ground in old woods, where the trees grow thick together; mould out of hollow trees,

[e] The ſpontaneous fruitfulneſs of the ground was a thing peculiar to the *primogenial* ſoil, (by which I mean the original mould at the creation and after the flood) for that was ſo tempered as to be more luxuriant than it could ever be afterwards; and, therefore, as that rich and proper temperament was ſpent, ſo by degrees it grew leſs fertile. "The fruits of the earth were, at firſt, ſpontaneous, and the ground, without being torn and tormented, ſatisfied the wants or deſires of man. When nature was freſh and full, all things flowed from her more eaſily and more pure, like the firſt running of the grape, or of the honey-comb; but now ſhe muſt be preſſed and ſqueezed, and her productions taſte more of the earth and bitterneſs."—*Burnet's Theory of the Earth*, vol. i. page 225.

trees, and ſaw duſt, reduced to a fine mould, provided it be not from wood of a reſinous kind, are, in part, of a ſimilar nature with vegetable mould from decayed leaves, but are neither ſo rich nor powerful, becauſe the vegetable mould receives a power by its fermentation, as I have obſerved in the ſection on the uſe of oak leaves.

It is very probable that there are various other kinds of manure, that may be introduced into a compoſt ſuitable for the Vine, with as much effect as the former; as blood, the offal of animals, or ſhambles manure, horn ſhavings, old rags, hair, ſhavings of leather, and bone duſt. This laſt is exceedingly proper, as at the ſame time that it gives a lightneſs to the ſoil, it contributes to its fertility. I may alſo add to the former, the dung of deer and ſheep, as likewiſe human ordure. But pleaſe to obſerve, that many, if not all, of the above recited manures, will require time to meliorate, before they can be introduced and incorporated with the other parts of the compoſt; wherefore being collected, and mixed with garden mould, they may be thrown up in an heap, in any convenient place of your garden. A winter's expoſure, with frequent turning over during that period, eſpecially in froſty weather, ſerves wonderfully to meliorate and haſten their diſſolution. The influence of a ſummer's ſun will not be leſs beneficial, by exhaling their crude particles, and, by ſweetening the parts, preparing them the more immediately for vegetation.——Having recommended ſo large a proportion of the

the dirt, or ſcrapings, of hard roads and pavements, to enter into the vineal compoſt, it may not be improper to bring this material again under conſideration.

The duſt, or dirt, from roads, conſiſts principally of the following particulars: Firſt, the ſoil of the vicinity; ſecondly, the dung and urine of horſes and other animals; and thirdly, the materials of the road itſelf when pulverized. Various other matter may be brought by winds, and by other means, but the foregoing may be deemed the principal. The firſt of the above articles is brought to roads by the wheels of carriages, and the legs of horſes and other animals; the laſt is the worſt part of the materials, as the duſt and ſcrapings from roads, made and mended with ſoft ſtone that grinds faſt away, is much inferior in its vegetating quality to that which is collected from hard roads. On the whole, however, this ingredient of compoſt from the roads is unqueſtionably in general of a fertile nature, which may be attributed in part to the dung, urine, and other rich materials of which it is compoſed; and, in part, to a kind of magnetic power, impreſſed upon it by friction, and its perpetual pulverization.[f]

[f] "I think it would be evinced, as conſtant and undeniable, that, amongſt the mechanical aids, (wherein ſtercoration has no hand) that of pulverizing the earth by contuſion, and breaking it with a plow or ſpade, is of admirable effect, to diſpoſe it for the reception of all the natural impregnations. For the earth, eſpecially if freſh, has a certain magnetiſm in it, by which it attracts the ſalt, power, or virtue, (call it

The nature of this road-earth ought to be duly conſidered when uſed in the Vine-compoſt, and its proportion adjuſted according to its quality. In a ſandy country it will naturally abound with particles of ſand, and long and continued rains will, of courſe, waſh away its beſt parts. High winds too, in dry weather, will as certainly deprive it of its lighteſt and fineſt parts, eſpecially when roads lie on eminences, or enjoy an open expoſure. Thoſe materials, therefore, from roads, are generally preferable, which are produced from an incloſed track in a low ſituation: Pavements, however, and hard roads, produce the beſt fulture of all. This compoſt is much better when collected in a moderate dry ſtate, than when it is either very wet or duſty. If ſcraped off the road in a wet and ſoft ſtate, when it is become dry it will be hard and cloddy, and will require time

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it either) which gives it life. Take of the moſt barren earth you can find, drained, if you pleaſe, of all its nitrous ſalts and maſculine parts, reduce it to a fine powder, (which may be done, even in large proportion, by a rude engine, letting fall a kind of hammer, or beetle, at the motion of a wheel) let this pulverized earth, and for the time inceſſantly agitated, be expoſed, for a ſummer and winter, to the viciſſitudes and changes of the ſeaſons, and influences of heaven. By this labour and reſt from vegetation, you will find it will have obtained ſuch a generous and maſculine pregnancy, within that period, as to make good your higheſt expectations; and to this belongs Sir Hugh Platt's contrition or philoſophical grinding of earth, which upon this expoſure alone, without manure of ſoil, after the like revolution of time, will, as he affirms, be able to receive an exotic plant from the fartheſt Indies, and cauſe all vegetables to proſper in the moſt exalted degree; and to bear their fruit as kindly with us as they do in their natural climates." For a further account of this curious and important ſubject, ſee page 27 of the laſt edition of Evelyn's Terra, with Notes by Dr. Hunter.

time to bring it to a proper condition. When thus circumſtanced, the beſt way of recovering it is, to give it frequent turnings in hard froſty weather.

The duſt and ſcrapings of roads are not only proper for Vines, but alſo agree with plants in general[g], and being mixed in an equal proportion with vegetable mould from decayed leaves, make an excellent compoſt for moſt kind of plants that grow in pots.

[g] In ſome kinds of moory or fenny ſoils, it formerly was found difficult to get ſets of either the Willow or White Thorn to ſtrike root, though it was obſerved, that the few plants of both, that chanced to take, generally grew remarkably luxuriant afterwards, and were very durable.

It is probable, that ſuch ſoils greatly abound either with a ſulphurous or an unctuous quality, ſo as to overpower the plants when newly ſet.

The ſcrapings of roads, and the dirt of ſtreets, are found to be effectual in remedying this complaint.

In ſome parts of the Iſle of Ely, and the adjacent low and moiſt country, it is now become a general practice to carry the road-earth many miles for this purpoſe. At the time of planting a few handfuls of this ſubſtance is put round each ſet, and a quantity juſt ſufficient to keep the natural ſoil from touching the bark of the plant, is found to be quite adequate to the purpoſe. By this mode of practice, numbers of willow trees are raiſed with the greateſt certainty, and fine white thorn hedge-rows now form and furniſh the boundaries of thoſe incloſures, which, formerly, were only ſeparated by ditches, to the great benefit, as well as ornament, of the country.

My own eyes have been witneſſes of the above curious and important fact; and I have a brother, who, at this day, occupies a farm in that country, and ſtill purſues this mode of practice.

After having ſpecified various kinds of manures that are known to be friendly to the Vine, it may not be improper to mention ſome others that ſeem to be hurtful and inimical to it[h]. Soot, wood-aſhes, pigeon and hen's dung, would all, I think, be too hot for the root of the Vine. Theſe, if you pleaſe to conſider, are manures that come immediately into action; and, therefore, are more properly calculated for top-dreſſing, and to enliven the ſurface, than to be buried at the roots in the ground below. Pond-mud and moor-earth would probably, on the contrary, be too cold for that purpoſe; and the latter, perhaps, be liable to canker the roots of the Vine; and therefore, on that account, had better be omitted. Theſe auxiliaries would, doubtleſs, be very proper for gardens, planted on a ſandy ſoil, and mixed, as we will ſuppoſe, with the common ſoil of the quarters that produce crops of vegetables for culinary uſe. Stable-yard dung would be too ſpirituous, hot, and fiery, were it to be introduced into the compoſt, before its heat was thoroughly abated; and, I fear, it would

[h] "And here the nature of the land ſhould be maturely conſidered, for we ſhould endeavour, by all means, to detect, as far as we are able, the quality predominant, both of the earth we ſhould improve, and the compoſt we apply, and not throw them promiſcuouſly upon every thing, without conſidering of what temper and conſtitution they be, for grounds are as nice as our bodies, and as obnoxious to infirmities upon every defect and exceſs; and, therefore, it requires ſkill and no little ſtudy to be able rightly to marſhal this *materia medica* (as I may call it) of compoſts, the virtue of which does, ſometimes, lie very hidden."

Evelyn's Terra, p. 54.

would be liable, by its ſinking, to cauſe the border to ſettle too much after the gravel was laid upon it.

I am fully perſuaded that the Vine is frequently injured by the common cuſtom of putting improper dung into the borders, for dung ſhould not be permitted to approach the roots, till it be perfectly reduced to a kind of black mould.

Lime will, it is ſaid, lend a friendly aid to the Vine; and, indeed, it is poſſible that ſome kinds of lime may poſſeſs that uſeful quality, for lime differs as much in its nature as land does. Lime made of the *peak* ſtone is of a rich and mild quality, and is uſed, with the greateſt ſucceſs, as a top-dreſſing for graſs-lands, and its good effects are very laſting; indeed, it is aſſerted, that land will be benefited by a coat of this lime for the ſpace of eighteen or twenty years. This ſpecies of lime might, in all probability, be of great ſervice, if admitted into the Vine-compoſt; but I am perſuaded that there is ſomething too powerful, if not pernicious, in lime of a different quality; and that Vines are greatly injured by the common practice of laying lime-rubbiſh for the bottom floor in the preparation of the ground; this floor being intended to give a check to, but not to injure the roots of the tree. On this account it would be prudent to diſcard the uſe of it in this mode of application.

Having thus duly conſidered the various ſoils, manures, and compoſt, and ſhewn which are the moſt ſalutary for the Vine, and

and which ought to be omitted; and having given ſuch directions as, I am willing to hope, will be found ample and ſufficient to enable a perſon to proceed with fair hopes of ſucceſs, in moſt ſoils or ſituations: I ſhall now proceed to lay down and deſcribe the moſt eligible method of raiſing Vine-plants. And here I am extremely happy in having ſomething, not leſs important than new, to communicate on this ſubject; indeed I ſhould be extremely reluctant to offer any method, different from the general mode of practice, merely on account of its novelty; but novelty, when attended by ſuperior excellence, is, certainly, a great recommendation.

The Vine admits of being propagated various ways: Firſt, by ſeeds; ſecondly, by layers; and, thirdly, by cuttings.—This tree can alſo readily be propagated by grafting and inoculation.

The Vine may eaſily be propagated by ſeed; for ſeed, carefully preſerved through the winter, riſes very freely, and eſpecially from the ſeed of grapes brought to early maturity.

This, undoubtedly, is the only way to obtain new kinds of grapes; but, nevertheleſs, it is little practiſed, partly on account of the diſtant proſpect and length of time, and partly from the hazard of obtaining better kinds than the original grapes from whence the ſeeds were taken. The proſpect, however,

however, is not ſo diſtant as many perſons may imagine; for a ſeedling Vine, judiciouſly managed, will produce fruit the third or fourth year; and as to the doubtfulneſs of obtaining better ſorts of grapes than the original, it certainly will be but too well founded, ſhould you make your experiment with ſeed indiſcriminately ſaved; but when proper care and attention is had to the ſeed you ſow, the proſpect will wear a more favourable aſpect, and the very beſt ſpecies may be hoped for, and reaſonably expected.

When Vines are intended to be raiſed from ſeed in hopes of procuring new kinds of grapes, that deſign ought ever to be kept in view. In Hot-houſes, where various ſorts of Vines are trained, it is an eaſy matter to bring the branches of two different kinds together, and it may be beſt done at the time of pruning. As ſoon as the Vines ſhew their fruit, the young branches of each ſhould be ſo brought together, that the bunches of two different kinds, in the ſame ſtate of maturity, may admit of being entwined; whereby the two bunches being in flower at the ſame inſtant, and the parts of fructification brought together, there will, undoubtedly, be a mutual impregnation, from which it may reaſonably be expected, that new and improved kinds of grapes will be produced.

Great regard, however, ſhould be had in reſpect of the ſorts intended to be brought together, and the advantages to be gained by this junction ſhould be duly conſidered. They are principally

principally the following: Firſt, a ſuperiority in ſize, both in the bunch and the berry; ſecondly, a ſuper-excellency in flavour, and a delicacy in the ſkin and fleſh of the fruit. The form of the bunch, and the length of the foot-ſtalk of the fruit, are alſo valuable objects, and ought to be conſidered as advantages, cloſe-growing grapes, which always have ſhort foot-ſtalks, being ſubject to many misfortunes.

The advantages to be gained by this method of proceeding being thus ſhewn and diſplayed, I ſhall beg leave to make a few obſervations on the manner of reducing it into practice. And the hints once given, it will be at the option of perſons of taſte and genius to run the parallel agreeably to their own fancies.

All the five ſorts of *Frontinac* grapes are proper to add an excellency of flavour to other kinds; but there is a ſuperior richneſs in the *black*, *blue*, and *red* Frontinacs, and they do not partake ſo much of the ſtrong muſcat flavour as the *white* and *grizzly* do. But it muſt be conſidered, that the *blue* Frontinac grows cloſe upon the bunch, and, therefore, is only proper to be coupled with the looſe-growing kinds that have long foot-ſtalks. The white Muſcat of *Alexandria* produces large looſe-growing bunches, and the berries being very large and well flavoured, it muſt be a proper kind to be joined with many other ſorts. There is a peculiar delicacy in the fleſh of the white *Sweetwater:* It is alſo a remarkably thin-ſkinn'd grape,

grape, with large berries; conſequently it is a proper kind to couple with various ſorts that are ſmall and leſs delicate. Were the red Frontinac and white Sweetwater wedded together, their union would, probably, produce a very valuable ſort, as there would be a good chance of its being both large and delicate, and well flavoured. The Syrian Vine is only admired for producing moſt aſtoniſhingly large bunches[i], and, therefore, I would not adviſe the joining this coarſe ſort to any

[i] This is ſuppoſed to be the ſort of grape alluded to *Numbers* xiii. 23. as it ſometimes produces bunches of eight or ten pounds weight and upwards. In the year 1781, a bunch was produced at Welbeck that weighed 19 pounds and an half. It was preſented by his Grace the Duke of Portland to the late Marquis of Rockingham, and was conveyed to Wentworth-Houſe (a diſtance of more than 20 miles) by four labourers, who carried it, ſuſpended on a ſtaff, in pairs, by turns. Its greateſt diameter, when hanging in its natural poſition, was 19 inches and an half; its circumference four feet and an half; and its length 21 inches three quarters.

The following curious and important note on this extraordinary bunch was written at that time by my much-eſteemed and learned friend the Rev. Samuel Pegge of Whittington, by whoſe permiſſion it is here inſerted:

"Our fruits, as well as our animals, are always found ſomewhere in a natural "ſtate, and ſo we read of *wild grapes* in Syria, *Iſaiah* v. 4. including Paleſ-"tine, or the land of Canaan in Syria, as we are authoriſed to do.

"The Vine, however, ſoon became an object of improvement and cultiva-"tion, ſince Noah, after the Flood, *planted a Vineyard*, *Gen.* ix. 20. and is from "thence ſuppoſed, by ſeveral learned men, to be the Bacchus of the Greeks "and Janus of the Latins; the name of this latter being derived from an "oriental word, ſignifying *wine*.

"This

other except the following, as in all likelihood the offspring would only produce bunches much leſs ponderous. But the white Muſcat of *Alexandria* having larger berries and longer foot-ſtalks, there would be a probability of producing a kind between this and the Syrian Grape that would exceed the original

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" This part of the world produced, anciently, both large grapes and large " bunches; for when the Twelve Spies were ſent by Moſes, then in the " Deſert or Wilderneſs, to view and reconnoiter the Southern parts of " the land of Canaan, they came unto the brook of Eſhcol, and cut " down from thence a branch with one cluſter of grapes, and they bare " it between two upon a ſtaff, *Numb.* xiii. 23. How large the branch, " cut with the cluſter, might be, is not known; and, perhaps, this mode " of carrying might be owing, not ſo much to the weight of the branch and " its cluſter, (ſince one man could very well carry both, though they ſhould " weigh 40 or 50 lb.) as that the cluſter being to be exhibited and ſhewn " to the people on their return, it was neceſſary to preſerve the fruit fair, " whole, and unbruiſed: However, it is to be preſumed, that the cluſter " was ſingularly large and fine, the tenor of the narration evidently imply-" ing that.

" But as to the largeneſs of the bunches in this quarter of the world, Strabo, " who lived in the reign of Auguſtus, teſtifies, that the Vines in Margiana " and other places were ſo big, that two men could ſcarcely compaſs them " with their arms, and that they produced bunches of grapes *two cubits* or " a yard long, which is more than a foot longer than that vaſt bunch pro-" duced by his Grace the Duke of Portland at Welbeck.

" We ſhould, probably, have heard more of the enormous cluſters of grapes " growing in theſe Eaſtern parts, if the country, ever ſince the ſeventh cen-" tury, when Abubeker over-ran it, had not been in the hands of the Sa-" racens,

nal parents both in ſize and flavour. Although the *black Hamburgh* is a thick-ſkinn'd grape, with coarſe fleſh, yet it has many good properties: It is a fine vigorous-growing Vine, that will ſtand forcing, and is a very plentiful bearer. The bunches too are generally large, and furniſhed with well-ſized berries, of a tolerable flavour. Theſe again having long foot-ſtalks, do not want much thinning; and, therefore, are not liable to decay, as is the caſe with moſt cloſe-growing kinds. If this ſort were to be coupled either with the *white* Frontinac

" racens, who, being Mohammedans, were not permitted the uſe of wine, " and, conſequently, would entirely neglect the management and culture of " the Vine.

" But though the Mohammedans of Syria did not propagate the Vine, nor drank " any wine but by ſtealth and treſpaſs, yet there were always ſome Chriſti- " ans mixed amongſt them, who took care to cultivate the tree for their own " uſe, though they made not its juice an article of merchandize or of ex- " portation; and their cluſters of grapes were often, no doubt, of the very " largeſt ſize and dimenſions. This may be inferred from what we find in " Huetius, 'that Crete, Chios, and other Iſlands in the Archipelago, afford " bunches of grapes of 10 pounds weight; ſometimes of 36, yea of 40 " pounds;' far exceeding the Duke of Portland's bunch.

" But ſtill it is a moſt extraordinary Phænomenon in this country, that a Vine, " though of the Syrian kind, ſhould, by care and judgment, and proper cul- " tivation, be made to produce a cluſter of 19 pounds and an half; and it " redounds much to the honour both of his Grace and Mr. Speechly, whoſe " admirable ſkill in his profeſſion is otherwiſe ſo well known to the public."

Whittington, Oct. 10, 1781. SAMUEL PEGGE.

or Sweetwater, there is great reaſon to ſuppoſe that the offspring would be an improved kind.

The following kinds alſo admit of a junction with great propriety, viz. The black *Damaſcus*, and grizzly Frontinac—the flame-coloured *Tokay* and red *Frontinac*—the white Muſcat of *Alexandria* and white Sweetwater—the black Frontinac and white Muſcadine—the St. Peter's Grape and white Muſcat of Alexandria.—It is probable that ſome of the foregoing advantages might be gained by an alliance between various other kinds; but I ſhall forbear to recite any further examples, enough having already been ſaid on this ſubject to ſtimulate perſons of taſte and curioſity, to purſue an amuſement that, one may venture to pronounce, will contribute both to their advantage and pleaſure.

It is evident that the preſent very extenſive variety of valuable kinds of grapes have been obtained from ſeed, either ſown by hand and raiſed with care, or from ſeed accidentally let fall by birds, or by other chances, whilſt the grapes continued in their wild ſtate.

I ſhall go ſo far, on this occaſion, as to augurate, that the beſt ſorts of grapes hitherto known, will, at ſome future day, be eſteemed only as ſecondary or inferior kinds. Since we know that the collection of gooſberries have been improved by ſeed, within the ſpace of a few years, to a moſt aſtoniſhing degree,

gree, ſurely, with the ſame care, attention, and public encouragement[k], as much may be done in the liſt of Vines. This I can aver, that the method of raiſing ſeedling plants is neither uncertain nor difficult, as ſeed from grapes, perfectly ripe, will vegetate with the utmoſt facility and certainty. In this place it will be neceſſary to obſerve, that the bunches entwined together ſhould be ſeparated as ſoon as the *farina* has fallen, and the grapes begin to ſwell, as the important parts of fructification have then performed the office for which nature intended them, viz. the propagation and increaſe of the ſpecies.

The grapes for ſeed ſhould be permitted to remain on the plant till they are perfectly ripe, as the ſeed is not till then quite matured, when it generally is of a very dark-brown colour. As ſoon as the ſeed is taken from the pulp, or fleſh, of the grape, it ſhould be laid on a ſheet of paper, or the like, in ſome

[k] In Lancaſhire, and ſome of the adjacent counties, public annual Meetings are eſtabliſhed and held for the encouragement of increaſing the variety of gooſberries, and premiums are annually given to perſons that produce the beſt new kinds. The acquiſition of the many new and valuable kinds of this ſpecies of fruit, which have lately been obtained from ſeed, may, in a great meaſure, be attributed to this public incitement. The conſequence is evident, that a ſimilar eſtabliſhment for the increaſing the varieties of grapes, would, undoubtedly, be crowned with equal ſucceſs. If ſuch a plan as here propoſed were eſtabliſhed in various parts of the kingdom, and public notice given thereof, it would certainly excite the admirers of this elegant branch of gardening to exert themſelves on the occaſion. Let but the project be begun and tried, and, I am perſuaded, that the ſucceſs it would be crowned with, would ſoon make it a faſhionable recreation.

ſome airy, but ſhady place, to dry, and then carefully preſerved till ſpring. If, however, the ſeed were to be immediately ſown, and the pots kept in the Hot-houſe, and moderate waterings given them during the winter, the plants would riſe and come up in the ſpring: But the great diſadvantage attending this method is, that the plants would be liable to come forward too early, and, of courſe, come weak. For although the ſeed would lie dormant during the winter, notwithſtanding the artificial warmth of the Hot-houſe, yet as ſoon as the days began to increaſe, and the ſun to regain his force, the genial warmth of his rays will ſoon, and, perhaps, too ſoon bring them up. It will, therefore, I think, be the moſt eligible to ſow the ſeeds about the end of February, or the beginning of March.[1] For this purpoſe, let ſmall pots be filled with very light, rich, ſandy mould; into each pot put eight or ten ſeeds; lay them at regular diſtances, and preſs them into the mould

[1] The beginning of March ſeems to be the moſt proper ſeaſon for ſowing the ſeeds of plants in a Hot-houſe. In the ſpring, it is cuſtomary to raiſe a ſucceſſion of crops of Kidney-beans in moſt Hot-houſes, which are generally ſown at intervals of 10 or 12 days, from the middle of December to the beginning of May. I have conſtantly obſerved a very diſtinguiſhable difference in every crop, till the beginning of March; each crop coming better, and growing more robuſt and vigorous than the preceding one. But, after the vernal equinox, the caſe alters, and the crops then come more weak, the plants growing tall, ſlender, and long-jointed.

I take it for granted, that the health, ſtrength, vigour, and longevity of a plant, (perhaps, too, the ſame may be ſaid of man) depends greatly on its good beginning.

mould with your finger to the depth of half an inch; then fill up the holes, and make the ſurface of the mould ſmooth and even.

The pots ſhould be plunged either in the tan-bed in the Hot-houſe, or in a temperate hot-bed, for a moderate warmth will, at that ſeaſon of the year, ſoon cauſe the ſeed to vegetate. As ſoon as the plants appear, they will require, from time to time, gentle ſprinklings of water, but this muſt be given them very ſparingly, eſpecially during the time of their having only ſeed-leaves; once a week or ten days, if the weather be fine, will be quite ſufficient during the time they remain in that ſtate; and ſhould the weather prove either gloomy or rainy at that juncture, let the watering be entirely omitted.

When

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ning. This remark may be deemed worthy the farmer's obſervation, as it will ſhew the importance and neceſſity of fixing upon a proper ſeed-time.

As the ſun's annual courſe is always the ſame, it neceſſarily follows, that the ſeaſons of a Hot-houſe, where the air is confined, muſt be nearly ſo too. But in the open air the caſe is very different, and we find, by experience, that there are many weeks difference in vegetation, according to the lateneſs or forwardneſs of the ſpring. Hence no fixed time can, with propriety, be aſcertained for ſowing the ſpring corn and graſs ſeeds, but nature's ſigns will be the farmer's ſureſt guide. The leafing of trees, the ſtate of the ground, and the weather, will, if well obſerved, afford the beſt directions to the farmer in this important buſineſs.

There are certain critical ſeaſons in the ſpring, when all nature ſeems combined to promote vegetation when the very air is big with impregnation, and the earth ſwells, as wiſhing for the deſcending ſhower.

When the plants have ſo far advanced as to have three or four joints apiece, they muſt be carefully ſhaked out and planted each in a ſeparate pot, filled with the ſame kind of mould as was before recommended.

The greateſt care will be required in the performance of the above operation, as it will be beneficial to preſerve as much of the roots as poſſible. When the plants again are placed in the tan, or the hot-bed, a gentle ſprinkling of water ſhould be given them; and from thenceforward they may be treated exactly in the ſame manner as will be recommended hereafter for plants raiſed from cuttings.

I ſhall go on, therefore, to obſerve, that it would not be prudent to furniſh a wall, or any part of a Hot-houſe, with ſeedling Vines in their untried ſtate, or before they have produced fruit. For although the proſpect of obtaining good kinds from ſeed ſaved in a Hot-houſe, be more promiſing and certain than that of getting them from ſeed of grapes in vine countries, (becauſe there, when the Vines flower, the very air is impregnated with the *farina* of the grapes of the vine-yard, which are, generally, of ſorts only eſteemed for making wine, but, in a Hot-houſe, the beſt-eating grapes are only planted,) yet many of the new kinds from ſeed will prove to be worſe ſorts than the originals from which the ſeed was ſaved. A ſpecimen, therefore, of the fruit, ſhould be obtained from each plant, be tried and taſted, before it is permitted to be planted againſt

againſt the walls, or preferred into the Hot-houſe. Hence you ſee it will be proper to keep the plants until they are three or four years old, before you diſpoſe of them either on the wall or in the Hot-houſe; and then, if they be managed as will be hereafter directed, they will produce the fruit you like and approve, and with the greateſt certainty.

Having diſpatched this new method of raiſing the Vine from ſeed, I ſhall next beg leave to ſuggeſt a few hints on the ſubject of the cuſtomary method of propagating this plant, and ſhall afterwards endeavour to lay down a new and improved method of raiſing vine plants by cuttings.

The general method of propagating the Vine is, either by layers or cuttings. The Vine is a free-ſtriking plant, therefore young plants may be obtained each way without much difficulty.

When the Vine is intended to be propagated by a layer, a ſhoot that will eaſily bend to the ground is generally choſen for the purpoſe. After making the ground light and fine with the ſpade, the ſhoot ſhould be faſtened by a ſmall hooked ſtick at about ſix inches below its ſurface. If a little light freſh ſoil, with a mixture of pond mud, were well cloſed about the bottom of the layer, it will facilitate its ſtriking.

The ground ſhould be well cloſed to the layer; the ſurface ſhould be made ſmooth, and formed into a kind of baſon, after which a little very rotten dung muſt be laid therein in the manner of mulching.

The layer will ſtrike freely, either with or without an inciſion being made at the bottom; early ſpring, before the riſing of the ſap, is the moſt eligible ſeaſon for the performance of this buſineſs, becauſe the ſhoot would be liable to bleed at the wounded part, as ſoon as the ſap begins to riſe.

During ſummer, if the weather prove dry, frequent waterings ſhould be given, for it is abſolutely neceſſary to keep the ground in a moiſt ſtate during that period. The new plant will acquire ſufficient roots in the courſe of the ſummer, to admit of its being taken off from the mother plant in the autumn, and this ſhould be done as ſoon as the leaf has fallen. Great care muſt be taken to preſerve the roots of the new plant uninjured through the ſucceeding winter, therefore it will be proper to keep the plant, during that ſeaſon, in a guarded ſituation, where it may be well ſecured and protected from froſt, as its future ſucceſs, in a great meaſure, depends on the preſervation of its firſt fibres or roots.

Vines are ſometimes laid in pots with great advantage. The moſt eligible method of performing the operation is, by conducting

ducting the ſhoot through the hole at the bottom of the pot, and by making an inciſion about ſix inches below the ſurface.

When a layer is taken from a ſtrong fruitful branch, and laid in a large pot, filled with proper compoſt, which muſt be done with great care and caution, it will ſometimes come immediately into bearing. Indeed, this is the principal advantage that accrues from this mode of practice; for Vine plants, raiſed by layers, are much inferior to plants raiſed by cuttings, both in point of future vigor and durability.

The uſual method of propagating the Vine by cuttings, has been in more general practice than that of raiſing plants by layers; the cuttings are formed of the lower part of the ſhoot, conſiſting of a few joints of the wood of the laſt year's growth, together with the knot and a ſmall part of the two years old wood. It has been an obſervation of ancient date, that a vine cutting, when formed complete, has the appearance of a little mallet.

The proper length of the cutting is a point that has not hitherto been perfectly ſettled and determined.

Miller, whoſe directions have been pretty much followed, allows it to be about ſixteen inches; others have preſcribed ſhorter dimenſions; but all agree that it ſhould conſiſt of ſeveral joints at leaſt of the laſt year's wood.

A cutting of this ſort will ſtrike freely, either with or without an artificial heat; a temperate hot-bed heat will, however, not only facilitate its ſtriking with greater freedom and vigor, but will alſo greatly accelerate the growth of the plant.

There ſeems to be a great ſuperfluity of wood in a cutting of the above deſcription; for when it is deep planted, the lower eyes in general decay; and, if planted ſhallow, the part above ground commonly dies down to the eye, even with or immediately under the ſurface.

In this place it will not be improper to obſerve, that various other plants, as well as the Vine, admit of being propagated by layers and cuttings, and that it is allowed that cuttings are generally preferable to layers, and that plants, raiſed from ſmall cuttings, commonly make the beſt plants. The cauſe ſeems obvious, viz. that it appears injurious to the new plant, in proportion as it partakes too abundantly of its original or the mother plant. Hence it is evident, that the leſs the matter that forms the rudiment of the new plant, the better. Indeed this theory is evinced by practice, for it is well known, that thoſe plants raiſed from ſeed, which have the ſmalleſt beginning, always make better plants, and are greatly preferable to thoſe of the ſame ſpecies, which are raiſed either by cuttings or layers.

It may be unneceſſary here to go through the common proceſs of raiſing Vine plants by cuttings of the foregoing deſcription, as I propoſe to offer a more advantageous method of propagating the Vine from only a ſingle eye, and about three inches and an half of the laſt year's wood[m]: Plants raiſed by this

[m] This mode of propagating the Vine from a ſingle eye firſt occurred to my very worthy and learned friend the Rev. Mr. Michell, who has been ſo obliging as to tranſmit to me the following curious and important account of the ſucceſs of this method:

SIR,

"I have received two letters from you ſince I wrote laſt; the former not requiring any immediate anſwer, I poſtponed writing till I could give you a ſhort account of the ſucceſs of ſome Vines that were planted cuttings in our way, the end of December, 1775, and beginning of January, 1776, ſo that they have had only one year's growth before this ſpring. One of them, which came to us for the white Sweetwater, but of which I have ſome doubts whether it may not turn out the white Muſcadine, has now no leſs than ſixteen bunches upon it, and I might ſay ſeventeen, if I would reckon every thing. The Vine comes out very ſtrong and vigorous, and ſeems able to ripen them all. The uppermoſt bud has brought out four bunches, the ſecond four bunches, and the third three bunches; and the loweſt bunch upon each of theſe is a full bunch; nor do any of them ſeem weaker than one might have expected upon a Vine of ſeveral years old. Another Vine, which is the Syrian, and was a cutting planted in the bark the 9th of January, 1776, has two bunches upon it, one only upon a branch; the bigger of theſe has its ſtalk at about half an inch or an inch from the branch, as thick as a moderate gooſe quill, ſo that it ſeems to be providing for a large bunch; but it is not expanded far enough yet to form an exact judgment of it, unleſs to a perſon who had ſeen more

"of

this method, as I have happily experienced, are greatly preferable to thoſe raiſed by cuttings in the common way, as they have

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" of it than I have; for I expect it will be a fortnight yet at leaſt before it " bloſſoms. The method of planting cuttings in the tan, with a ſingle " eye to them, is our own. I have never ſeen nor heard of its being uſed " by any body elſe, except thoſe to whom my brother and ſelf have recom- " mended it: It may, however, not improbably have occurred to others " who may have practiſed it, as well as ourſelves. What firſt ſuggeſted it " to us to try it, was, that we found cuttings, with two or three eyes to " them, planted in the common way, which was the way we firſt raiſed them " in pots of earth, and plunged into the tan, one eye being left above the " earth, were not only troubleſome from their great length, but that the " eye above ground either dried up entirely, or ſhot weakly at beſt, and alſo " often died away again afterwards, whilſt the buds that were covered with " earth got up and throve much better. This ſeemed to ſay, let the bud " intended to grow be covered. We alſo obſerved, that few or no roots ſhot " from any part but the fartheſt or loweſt extremity of the cutting, ſo that " all the intermediate parts ſeemed to be of little or no uſe, provided the roots " would ſhoot equally well from the extremity, when ſhortened to one eye " only; and to be ſatisfied that the joint, immediately below the eye, is " deſirous of throwing out roots for the uſe of that eye, one need only look " at the roots which are thrown out in ſeveral parts of the Vines that are " growing vigorouſly in a Hot-houſe, which, very manifeſtly, I think, " ſhew that they belong to the eye, or branch proceeding from the eye, im- " mediately next above them. All theſe together made us think it very " likely that the method we now uſe would ſucceed, and we had already " got into the way of planting the cuttings in the tan firſt, rather than in " pots of earth from the beginning, finding, by experience, as well as learn- " ing from others, that moſt things would begin to ſtrike much more rea- " dily, as well as more certainly and kindly in that manner, than the other.

" The

have more abundant roots, grow ſhorter jointed, are more prolific, and will, if permitted, come into bearing the ſecond year. The

" The cumberſomeneſs of a cutting of fifteen or eighteen inches long, that " no pot almoſt will contain, was a thing one would wiſh to get rid of: " The experiment was eaſy to try, and no loſs if it did not ſucceed; we " therefore made the experiment, and in three or four years, that we have " uſed the method, have found no reaſon to think that Vines can any way " be raiſed more eaſily or ſooner, or that the Vines raiſed this way are, in " any reſpect, leſs vigorous or leſs perfect, either when younger, or as old " as we have yet had time to ſee them, than thoſe raiſed in any other way; " nor do I think that old wood in the cuttings is either neceſſary or uſeful, " a Hot-houſe ſummer, upon plants (that by being planted in the bark, " begin to grow a month ſooner than the other Hot-houſe Vines, or even " more, if you pleaſe) being fully ſufficient abundantly to ripen their " wood, if not even almoſt to over ripen it. And that you might have the " means of judging a little better of the merit of this method, I have given " you the account, in the beginning of this letter, of two Vines planted in " that manner, which, however, I hope to have the pleaſure of ſhewing you " ſometime this year, with the fruit upon them, when you will have a " better opportunity of ſatisfying yourſelf about it. As to your propoſal of " planting the cuttings ſingle in pots with ſifted tan, I have no doubt but it " will do very well; but I doubt whether quite ſo well as in the bark with- " out pots; for beſides that I think the pots prevent the heat, &c. from " being quite ſo kindly, there may ſo many more cuttings be planted in the " bark; and if they are four or five inches only aſunder, and are not ſuffered " to grow there too long before they are potted, there is no difficulty in " ſhaking off the bark, ſo as not to hurt the roots, and they come " ſufficiently near together in point of time, their having ſhot a little, more " or leſs, not being very material; for when they have once begun to ſhoot, " and have got tolerable roots, they will then, as far as I have ſeen, grow very " kindly in pots of earth, whether they are a little more or leſs advanced."

Thornhill, April 3, 1777. Your's, &c.

The cauſes being thus aſſigned for the preference given to plants raiſed by this method, and the advantages gained by this mode of practice thus ſpecified, I ſhall now proceed to give directions at large on this ſubject.

The firſt care ſhould be to make choice of proper and well-ripened wood to form the cuttings, as it is abſurd to imagine that good plants can ever be produced from wood imperfectly ripened: Indeed the caſe here is exactly ſimilar, and may be conſidered in the ſame light, as between plants raiſed from well-perfected ſeed, and plants growing from ſeed not well matured.

Some perſons are of opinion, that cuttings taken from the lower part of the Vine are preferable to thoſe that grow higher and at a diſtance from the root. But for my part, I confeſs I could never find any difference, ſo as to induce me to give the preference to either, provided the wood was equally well ripened. But it generally happens that the beſt wood is produced at the moſt diſtant parts from the root, and eſpecially in Vines trained againſt rafters in the Hot-houſe, where there is generally a very diſtinguiſhable difference between the top and the lower parts of the plants, in reſpect to goodneſs.

The new ſhoots conſtantly appear firſt at the moſt diſtant parts, and are generally more ſtrong and vigorous, in proportion to their diſtance from the roots. I mention this particular,

lar, becauſe forward ſhoots from Vines, forced early, are the moſt eligible for the intended purpoſe. Early and forward ſhoots, having a longer ſummer than thoſe afterwards produced, will, of courſe, be better ripened and matured.

Vines againſt common walls, or in vineries, that are not forced early, will ſometimes produce remarkably ſtrong wood, and ſuch ſhoots, on account of their uncommon ſize, are, by unſkilful perſons, frequently choſen for cuttings.

The extraordinary ſize of the ſhoot I conſider as one of the leaſt requiſites neceſſary to form a good cutting. Indeed exceeding ſtrong ſhoots generally abound too much with pith to claim a preference. I wiſh to obſerve too, that much depends on the nature and form of the eye, or bud, as well as the wood, and that better buds are generally produced from ſhoots of a moderate ſize, than from exceeding ſtrong ones.

The particulars neceſſary to form a good cutting are principally theſe: 1. The eye, or bud, ſhould be large, prominent, and bold; 2. The ſhoots ſhould be moderately ſtrong, round, and ſhort-jointed; 3. The texture of the wood ſhould be cloſe, ſolid, and compact; but the beſt criterion of its maturity is, its ſolidity, and having very little pith [n].

[n] The young vigorous ſhoots of many trees, as well as the Vine, greatly abound with pith. Among theſe the Elder ſeems to be the moſt remarkable. I have obſerved

At the pruning ſeaſon, therefore, make choice of ſuch ſhoots as come under the above deſcription, cut them to any convenient length, and put them into pretty large pots filled with light

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ſerved a pith in young vigorous ſhoots of this plant that has meaſured above five-eighths of an inch diameter; and here it may be deemed worthy of obſervation to remark, that the pith of ſuch ſhoots decreaſes in proportion as the wood becomes more mature, and its place occupied and filled with new wood, which ſhows that wood grows internally as well as externally; a conſideration from hence will enable us to ſolve a certain phænomenon in foreſt trees. It is obſervable that the under branches of the oak and other foreſt trees are conſtantly in a ſtate of decay, and eſpecially in neglected woods of large trees where they ſtand near together. And the cuſtom has been in many places, though a very injudicious one, to cut off thoſe dead branches even with the bole of the tree. But now ſuppoſe that a dead branch of three, four, or more inches diameter happens to ſtand inclining to a perpendicular direction, (which is frequently the caſe) and this be cut off in the above manner, it generally proves extremely injurious, by cauſing a material defect: For the bark of the tree ſoon riſes round the baſe of the ſtump, and thereby forms a kind of baſon to receive the falling rain; and thus the remaining dead wood (for the lower part of the branch incloſed in the tree dies alſo to a conſiderable depth) is ſoon brought into a ſtate of decay, which, by being infectious, becomes general, and often terminates in the almoſt entire deſtruction of the tree. Let us now conceive a branch of the above deſcription left to nature, and obſerve the conſequence. Her efforts, as in critical caſes of the human body, will ſometimes perform what the moſt eminent ſkill and niceſt art cannot accompliſh. The upper part of the branch ſoon decays, and naturally falls off firſt; one may then really conceive the remaining part to be as a peg or wooden pin, ſhapen exactly, and fitting and filling up the wounded part for the preſervation of the tree. Here it ſhould be underſtood, for the upper part of this imaginary pin to extend beyond the

light ſandy earth. Let the bottom of each ſhoot be cut with a ſharp knife, perfectly ſmooth, as they will then receive the moiſture from the mould better than when the wound is rough.

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the body of the tree, while its baſe below is grown over by the annual increaſe of the bole.

Now the *outſide* of the extending part of the dead branch (or imaginary pin) being leſs mature than the heart or centre, by being expoſed to the weather, it will, of courſe, decay firſt; and I have conſtantly obſerved it generally falls off in annual ſcales. As theſe ſcales ſhell off, the increaſing new bark ſwells round the baſe of the ſtump, and occupies the ſpace till it meets and unites in the centre.—As the new bark covers a conſiderable part of the dead wood, (for, as has been obſerved, the lower part of the branch, incloſed in the tree, dies alſo to a conſiderable depth, for the decay will follow the grain of the wood.) The important ſubject to be diſcuſſed is, whether it may not contribute either to the general decay in the bole of the tree, or cauſe a material blemiſh in the wood, when it comes to be converted into uſe. Now the remaining part of the ſtump being protected from the weather, and excluded from the air by the ſurrounding live wood, it may be conſidered, in a great meaſure, as ſimilar to the pith of the tree, but with this difference, as having more body, and being of a firmer texture, conſequently its decreaſe will not be ſo rapid; however, length of time will reduce it to a vegetable mould. This is evident, as theſe dead ſtumps are never found entire in the bodies of large, ſound, unſhaken trees, when converted into uſe. However, this vegetable mould being devoid either of ſand or earthly particles, retains but little body in this ſtate; and being compreſſed by the *internal growth* (as admitted above) of the ſurrounding live wood, it will, at the laſt, terminate in nothing more than a ſmall black knot. I muſt beg leave to obſerve, that the dead branches of trees, of the reſinous kind, do not come under the above deſcription, for the dead branches of trees, of this claſs, are preſerved by a turpentine matter quite entire, and in their original magnitude. This is evinced by the knots we conſtantly obſerve in deal timber. As the preſervation of timber is an object of ſo much importance, I am willing to hope that it will be deemed unneceſſary to apologize for this digreſſional note.

They ſhould not ſtand too deep in the pot, as the eye below the ſurface of the mould might receive a material injury during the courſe of the winter, and thereby be rendered unfit for the intended purpoſe.

Ten or twelve cuttings may be put into each pot, but they muſt not ſtand too near together, as in that caſe they would be liable to grow mouldy.

When various kinds are intended to be propagated, each ſort ſhould be kept in a ſeparate pot, with a label affixed to denote the ſpecies.

During the winter, keep the pots in a ſheltered ſituation, and by all means let them be protected from the ſeverity of the ſeaſon. However, in fine mild weather, though it be in the winter time, the cuttings will be benefited by being permitted to ſtand awhile in the open air. This expoſure will ſwell, and give a boldneſs to the bud, and alſo keep the wood freſh and continue its vigor; but great care, nevertheleſs, muſt be taken to carry the pots into ſhelter on the leaſt approach of froſt.

The principal care required during the winter ſeaſon is, to keep the mould in a proper degree of moiſture, in order to give the cuttings as much free air as poſſible; but at the ſame time to protect them from froſt. The putting the cuttings in pots,

pots, and this management of them, is only intended to keep them as freſh as poſſible till the planting ſeaſon.

As the cuttings require a hot-bed, and the beginning of March being the proper ſeaſon for planting them, dung ſhould be previouſly provided for the purpoſe. I will not take up the reader's time in going through the common proceſs in the preparation of the dung, and the making of the hot-bed, theſe operations being generally underſtood by almoſt every Gardener; let it therefore ſuffice to ſay, that the bed ſhould be, in all reſpects, adjuſted as if intended for melons, and proportioned in its dimenſions to the quantity of plants deſigned to be raiſed.

In about three weeks after the bed has been made, and its furious fermentation has ſubſided, take off the frame, and let the bed be well trodden and made ſmooth; and in ſuch manner that the ſurface may have an eaſy declivity to the South. Then replace the frame, and cover the bed about ſix inches deep with very fine light ſandy earth, in which the pots are to be plunged. Tan would anſwer this purpoſe, but I prefer a a light ſandy ſoil, becauſe (a conſtant ſteam naturally riſing from the hot-bed) the ſteam that proceeds from ſoil is more agreeable and wholeſome to the cuttings, than the ſtench that evaporates from tan.

Watch-ſticks ſhould be thruſt down into different parts of the bed to aſcertain its heat; and then, as ſoon as the heat becomes

comes moderate, fill a number of the ſmalleſt ſized pots, (viz. $4\frac{6}{10}$ inches diameter, and $3\frac{8}{10}$ deep, inſide meaſure) in proportion to the number of plants you wiſh to raiſe, with very fine light ſandy mould. Plunge the pots quite up to their brims into the mould in the frame, and then ſhut down the glaſſes till the mould in the pots becomes warm, which done, prepare and plant the cuttings in the following manner.

Now as I have already ſhewn the properties which conſtitute a good cutting, I ſhall here deſcribe the manual operation required in the formation of it.

Let the upper part of the ſhoot be cut ſloaping with a ſharp knife, about a quarter of an inch above the eye; and at about three inches below the eye, cut off the wood horizontally. Great care, however, ſhould be taken to leave the wood ſmooth at the bottom; the upper part too ſhould be taken off with a clean ſtroke. As each joint affords one good cutting, a few ſhoots of about one foot long will afford you great choice.

The cutting being ready, make a hole with the finger, or by thruſting a ſmall dibble down between the mould and the ſide of the pot, into which let the cutting be carefully inſerted, and ſo placed, that the eye may admit of being covered about a quarter of an inch deep, with the fine rich mould above deſcribed.

It is very obſervable that a cutting ſtrikes with greater freedom againſt the ſide of the pot than in the middle of it, for the pot, being porous, imbibes the moiſture, and thereby prevents the cutting from being overcharged with it, which is not the caſe, when a cutting is planted in the middle of the pot.

I always plant the cutting on the North ſide of the pot, putting a label to denote the ſpecies on the oppoſite ſide; and whenever the plant is ſhifted into a larger ſized pot, or removed to a different ſituation, I conſtantly obſerve the ſame rule.—Thus the plant being raiſed from a ſingle eye, it riſes as it were from ſeed, and the foregoing rule being obſerved, it will always ſtand with the ſame ſide towards the ſun; and by being planted on that ſide of the pot which ſtands to the North, it will admit of being kept in the ſame poſition when planted out for good; whereas it ſhould be conſidered, that were it to be planted on the oppoſite ſide, (viz. that which ſtands next the South) the plant muſt either be reverſed in its poſition when planted out for good, or there would remain the entire breadth of the ball of earth in the pot between the wall and the ſtem of the plant.—Plants in general, but particularly thoſe kept in Hot-houſes, or that are intended to be planted againſt walls, are benefited more by a ſtrict obſervance of this method, than is commonly imagined. The ſhoots, leaves, and even the bloom-buds of plants, all form themſelves in the moſt advantageous poſition to receive as much of the ſun's influence as poſſible.

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The ſun is the primary cauſe, the very life and ſoul of vegetation; and by a certain kind of natural magnetiſm, plants, in general, have almoſt as great a propenſity to tend to that glorious luminary, as all the various bodies ſurrounding the earth have, by their gravity, a tendency to its centre.

In the ſpring, after a dark ſeaſon, when the ſun chances to break forth in a ſerene evening, it is pleaſing to obſerve ſmall ſeedling plants, of all kinds, bending with their little faces towards the ſun, as if ſtraining and deſirous to partake, as much as poſſible, of his divine influence.

From hence it is not difficult to conceive the reaſon why, on this ſide of the equator, our plants in general, I ſpeak of thoſe in the open air, ſhould have a certain inclination to the South, and even ſo as to render their forms (particularly trees) crooked. But it muſt be conſidered, that in the ſummer, when vegetation is in its full career, the ſun's rays fall daily almoſt on every ſide of plants. Beſides the above cauſe, plants growing in the open air are alſo greatly agitated by the wind, which, by its variableneſs, conſtantly moves them to and from every ſide; and it is from theſe two cauſes in conjunction, that plants grow erect and branch out, as we ſee they do almoſt equally on every ſide.

But now plants in the Hot-houſe have a far greater propenſity to incline to the South, than plants growing in an expoſure, becauſe

becauſe they are not only ſheltered from the wind, but are alſo deprived of light from the North, by the conſtruction of the building.

As ſoon as the cuttings are planted, give them a very gentle watering, and then put on the glaſſes. A gentle moderate bottom heat is all that is required, and therefore great attention ſhould be had reſpecting the heat of the bed. A briſk lively heat, that might agree with many other plants, would be too powerful for the Vine. For the firſt ten or fifteen days after planting, a great deal of air ſhould be admitted, in the day-time eſpecially, if the weather be clear; and even, ſhould the weather prove mild, a little will be required at night alſo: It will be prudent, however, to cover the glaſſes with mats for fear of froſt. Should the glaſſes be kept too cloſe, the buds will riſe with too much rapidity, that is, before any roots are formed. I have ſeen ſhoots one inch high in the courſe of a few days; but ſhoots of ſuch a quick progreſs are very liable to be deſtroyed by a ſtrong ſun; and, therefore, in clear weather, it will be adviſable to ſhade the plants in the middle of the day; and at theſe times a leſs quantity of air ſhould be admitted.

Give the plants a gentle ſprinkling of water every four or five days in fine weather; but ſhould it prove dark and moiſt, once in eight or ten days will be ſufficient. Obſerve always to water in an evening, juſt when the ſun is going off the plants,

and let the glaſſes be ſhut down cloſe in the nights after watering: This will cauſe a moiſture to be raiſed in the bed, which the plants will imbibe to their great benefit.

As the plants increaſe in ſize, conſtant waterings ſhould be given, and a greater quantity of air admitted in proportion to their progreſs: By the time they get to be ſix or eight inches high, they will require to be ſhifted into pots of a larger ſize. Great care, however, ſhould be taken in the performance of this operation, neither to injure the top nor roots of the plant.

The plant ſhould be turned out of the pot with the roots and ball entire, and the pot ſhould be ſufficiently large to admit of a proper quantity of freſh earth on this ſhifting. I generally put the plants into pots of ſeven inches diameter, by ſix deep, (inſide meaſure.) If the heat of the bed begins to abate, it ſhould be renewed with a little freſh ſtable-yard dung, and the frames ſhould be raiſed to a proper height, in proportion to the progreſs of the plants.

In replacing the plants in the bed, regard ſhould be had to ſetting them in the ſame poſition they were in before, for the reaſon already given.

Small ſticks ſhould be provided to ſupport the ſhoots when they are grown to the length of ten or twelve inches. Pinch off the wires or tendrils, and alſo the lateral ſhoots, as faſt as they

they are produced. Keep the pots clean from weeds, and give the plants frequent and gentle waterings; but this muſt be adjuſted according to the ſtate of the atmoſphere, ſince, in moiſt weather, the humidity of the air, in a great meaſure, anſwers the purpoſe of watering.—Give plenty of air at all times, but eſpecially in a fine day, when, if there be not much wind, the glaſſes ſhould be entirely taken off. If the glaſſes be kept too cloſe, the want of a ſufficiency of free air will cauſe the plants to grow tall and long-jointed: And it is for the ſame reaſon, that the plants ought not to make too rapid a progreſs in the fore part of the ſummer, it being far more deſirable that they ſhould grow robuſt and ſtrong, which they are more likely to do with a gentle bottom heat, and when a ſufficient quantity of free air is admitted.

If the weather ſhould prove favourable at the end of May or beginning of June, the plants will require as much free air as poſſible; and, therefore, the covering ſhould be entirely omitted, except when there may be an appearance of froſt at night; and even then, the glaſſes ſhould not be ſhut down cloſe.

Should any of the plants appear weak and unpromiſing at this ſeaſon, viz. about the middle of June, I generally cut them down to the lowermoſt eye; and then they will, by the aſſiſtance of a hot-bed, ſtrike freely and rapidly, and produce ſtrong, ſtraight, and vigorous ſhoots; and, by proper care and

attention, the wood may be brought to a tolerable degree of perfection even after this ſeaſon.

In places where a Hot-houſe, or Vine-wall and border, have been previouſly provided, and are in readineſs for the plants, it would be adviſable to plant the Vines out for good, about the end of June, or beginning of July, as they will make a good progreſs after this ſeaſon in the ſame year. But in new works, it is almoſt impoſſible to get the building and border ready to receive the plants the firſt ſummer, as the border will require a competent time to be worked over, to meliorate, and to ſettle, therefore my directions will, principally, relate to ſuch plants as are kept in pots through the firſt winter. I the more ſtrongly recommend this mode of practice on another account, which is, that as ſo much depends on the preſervation of the firſt roots, the plants can be better preſerved in pots, which may be ſet in a green-houſe, &c. in the winter, than when planted in the open ground, where they will be expoſed to the ſeverity of the weather.

In the months of July and Auguſt the young plants will require very little artificial heat. I have ſometimes placed them againſt a common wall during thoſe months, and have found the plants ſucceed very well. They will, however, by the aſſiſtance of a bottom heat, grow faſter; and by being kept in a Hot-houſe, they will make ſtill a greater progreſs. I have ſometimes had plants which have made ſhoots upwards of twenty

twenty feet long in the firſt ſummer. But when plants are intended to be kept in pots through the winter, a moderate-ſized plant is preferable; becauſe in large plants, (and ſuch as are kept many years in pots) their roots will be too much bound together and matted. A plant, with a ſhoot of about five or ſix feet in length, moderately ſtrong, and perfectly well ripened, is quite ſufficient.

I generally ſtop the plants (by pinching off their tops) at that length; for, if intended for a vinery, they will require to be cut down within a few inches of the ground; and, if for taking through the front wall, and training in ſuch Hot-houſe as is here recommended, about three feet is a ſufficient length. But when plants are wanted for any purpoſe where a longer ſtem is required, they muſt be trained accordingly. In all caſes, however, it ſhould be remembered, that four or five eyes at the top of the ſhoot generally break out into laterals, and thereby render that part of the wood uſeleſs, ſo that a proportionable allowance ſhould be made in conſideration of this defect.

The pots ſhould be conſtantly kept clean from weeds, and, during the hot months, very frequent waterings ſhould be given to the plants. In very hot dry weather they will require a little water twice a day.—I conſtantly cover the ſurface of the mould in the pots with a little rotten cow's dung. This

mulſhing

mulſhing prevents the mould in the pots from drying too faſt, and alſo contributes to invigorate the plants.

When Vine-plants have been trained up either againſt a common wall, reed-hedge, &c. (where they will ſucceed very well during the hot months, eſpecially in a ſheltered ſituation, and particularly with the aſſiſtance of a bottom heat) it will be proper to bring them into a Hot-houſe about the beginning of September; becauſe, if permitted to ſtand in the open air, they generally loſe their leaves on the firſt autumnal froſt; and after this the wood cannot attain to a proper degree of maturation; whereas, in the Hot-houſe, they will conſtantly retain their leaves till the beginning of December; and, when this is the caſe, the wood will generally be in the higheſt degree of perfection.

About the middle of December the plants ſhould be pruned down to the proper lengths required; if intended to take through the front wall of an Hot-houſe, three feet and a half is a ſufficient length; but if intended to plant in a vinery, they ſhould be cut down to eight or nine inches.

Towards the latter end of December, it will be neceſſary to remove the plants into a green-houſe, glaſs-caſe frame, &c. in which cool ſituation they muſt remain till the middle or towards the latter end of February; when, if the ſeaſon proves tolerably favourable, they ſhould be planted out for good.

During

During the time the plants ſtand in this cool ſituation, they ſhould be watered very ſparingly; a little water given every ten or twelve days, juſt to keep the mould in the pots moderately moiſt, will be quite ſufficient. Give plenty of air in mild weather, and eſpecially towards the latter part of the time; for if the plants are kept too cloſe and warm, they will be liable to ſhoot too early, in which caſe they ſhould be planted directly, that is, as ſoon as the eyes appear in motion, for the plants would be greatly injured by being retarded in their progreſs after this period.

I will now ſuppoſe the Hot-houſe to have been built the preceding ſummer, and the border previouſly prepared, according to the foregoing directions; in which caſe, if the weather will permit, the Vines ſhould be planted about the latter end of February, or beginning of March, in the front of the Hot-houſe, in the following manner. As the eyes of the Vine-plants are liable to be injured by being taken through the holes of the front wall, ſome method ſhould be adopted by way of prevention. I generally put a little moſs round the upper part of the ſtem of the plant, and over this wrap two or three thick folds of paper, which I tie round with the ſtrands of baſs matting.

Oppoſite to each rafter, and cloſe to the front wall, make holes of about two feet diameter, and one foot deep; let the mould taken out of the holes be made fine; and if a little fine

compo

compoſt mould, of a very rich quality, be added thereto, it will facilitate the growth of the plant. Turn the Vine-plant very carefully out of the pot, and put the upper part of the ſtem through one of the holes of the front wall. If the ſhoot will juſt reach the bottom of the rafter, when planted, it will be ſufficient. But as the mould put into the hole, and the border itſelf too, may yet ſettle a little, an allowance of two or three inches ſhould be made for the ſettling of the plant alſo.

Obſerve to ſet the plant with its proper ſide to the ſun; then, while one perſon holds the ball in the exact place in which it is deſigned to ſtand, let another put mould carefully under and round every ſide thereof. In cloſing the mould to the ball, care ſhould be taken to preſerve the roots of the plant. The extreme points of the fibres being exceedingly brittle, are very ſubject to be injured unleſs great care be taken in the performance of this operation. Raiſe the mould about one inch above the top of the ball, and form the ſurface into a kind of ſemicircular baſon, in which it will be expedient to lay a thin mulſhing of rotten dung, and to give a gentle watering to ſettle the whole. Then take off the moſs, paper, &c. and let the top of the ſhoot be carefully faſtened to the rafter. Thus the buſineſs is compleated.

To direct the very identical kinds of Vines to be planted, may, perhaps, be deemed an act of officiouſneſs, ſince every one, who is at the expence of an Hot-houſe, has an undoubted

doubted right to conſult his own palate; and more eſpecially, as I have, in a former part of this work, pointed out the kinds moſt proper for training in a pine-ſtove: I ſhall, however, juſt beg leave to obſerve, that the more vigorous-growing kinds ought not to ſtand next each other; and that, if the different ſpecies of black, white, blue, grizzly, red, and amber were judiciouſly mixed, they would have a much better effect in regard to beauty and appearance, than when two or more of the ſame colour are planted together °.

The Vines, in general, will begin to ſhoot immediately after they are brought into the Hot-houſe: Only one ſhoot ſhould be permitted to remain on each plant; but for fear of an accident, (for young ſhoots eaſily break off from the old wood) it will be adviſable to let two remain, till they are grown to a ſufficient length to be faſtened to the rafters. When one ſhoot is ſecure, the other may be taken off, but not cloſe to the old wood, as it would occaſion it to bleed, and thereby greatly injure the Vine.

° Mr. Carter, in his "Journey from Gibraltar to Malaga," gives the following ſuperb account:—"This hill is ſo full of verdure, that the village, as well as the roads about it, are, in a literal ſenſe, covered, ſhaded, and crowned with all manner of fruit-trees of a prodigious ſize; to whoſe topmoſt branches the luxuriant Vine mounts vigorouſly and hangs in over-grown cluſters, numberleſs bunches of red, black, and green grapes, which frequently intermixed with the golden-apple, the Pomgranate, and the Orange, expoſe a moſt enchanting picture to the charmed eye." p. 7.

From the time the Vines begin to grow, they will require conſtant watering, eſpecially in dry weather, and more particularly in the beginning of the ſeaſon before the roots penetrate deep into the border.

Let a ſhoot be trained up to each rafter; when the rafter is of a competent depth, and bevelled off nearly to an angular point on the under-ſide, the ſhoot ſhould be faſtened thereto; but when the rafters are not of a ſufficient depth to keep the leaves of the Vine from touching the glaſs, the beſt expedient is, to fix iron pins, of about nine inches in length, at proper diſtances under each rafter. There ſhould be a ſmall hole, or eye, at the bottom of theſe pins, through which a ſmall iron rod, or ſtrong wire, ſhould be fixed, for the ſupport of the branch. The pins and wires ſhould be painted as ſoon as the work is finiſhed, as the moiſture, which ariſes in the Hot-houſe, would inſtantly cauſe them to ruſt and decay.

It is not unuſual for Vine-plants, raiſed in the manner here directed, to ſhew fruit at one year old. I have often had plants that have born many bunches at that age, and have ſometimes permitted three or four of them to remain on the plant, and they have been brought to a tolerable degree of perfection; and that too, even when the plant has grown in a pot not more than one foot diameter. But when Vines are planted with an intent to furniſh the roof of an Hot-houſe, they ſhould not

not be allowed to produce fruit the firſt ſeaſon, as it would tend to debilitate the plant, and prevent its progreſs in growth: However, when a perſon is deſirous of proving the kinds, one bunch, with the berries well thinned, may be ſuffered to remain, without much injury to the plant.

During the ſummer, if the Vines meet with no impediment or diſaſter, they will make a good progreſs. Obſerve, however, to water their roots conſtantly; and, as their ſhoots make advances, keep them regularly faſtened to the rafters: Diveſt them alſo of their wires, and alſo of their laterals whenever they appear: But, above all, guard well againſt inſects, particularly the Acarus, or red Spider: The rapid, though inſenſible depredations ſometimes committed by theſe minute intruders, are really aſtoniſhing: But I ſhall have occaſion to ſpeak more fully on this head in another place.

The Vines may be permitted to run two thirds of the length of the rafters, or, in general, about twenty or twenty-five feet, before they are ſtopped: And thoſe, that grow remarkably ſtrong, may be ſuffered to run the whole length of the rafters, or about thirty feet.

When the Vines were planted in the large Hot-houſe at Welbeck, in 1779, I permitted, by way of curioſity, a remarkably vigorous-growing plant, of the white Muſcat of Alexandria, to make a random progreſs after it had got to the

top of the rafter. It was trained ſideways along the top of the ſtove. It continued to grow till late in the month of November, when, on taking the meaſurement of the ſhoot, I found it forty-ſix feet ſeven inches [p] in length. In December it was pruned

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[p] The following account of the ſurpriſing progreſs of ſome Vines, laſt ſummer, at Kelmarſh in Northamptonſhire, addreſſed to me by William Hanbury, Eſq; will, I truſt, prove highly acceptable to my readers:

" Agreeably to your requeſt, I herewith tranſmit you an account of the pro-
" greſs of the Vines I had from you in November, 1786. The ſurpriſing
" ſhoots they have made in one ſeaſon, have aſtoniſhed every one who has
" ſeen them.

" You ſent them in balls of earth. The plants were ſmall, the ſhoots not
" thicker than a gooſe quill, and raiſed, as you ſaid, from ſingle eyes the
" preceding ſpring. They were immediately put into pots about ten inches
" diameter. Their future management was nearly as follows:

" The pots were put into the Hot-houſe, and the plants were cut down to the
" lowermoſt eye in each. The ſoil a freſh ſandy loam, mixed with about
" one third of rotten ſtable-yard dung.

" The Vines were conſtantly kept in a moiſt ſtate; and, from November to
" March, were watered with rain-water only; but from March to June,
" we often watered them with ſoap ſuds.

" During the time the Vines were in the Hot-houſe, they were kept perfectly
" clean, and free from inſects: Only one ſhoot was permitted to grow from
" each plant.

" The laſt Week in June the Vines were taken carefully out of the pots, and
" planted in a border on the South ſide of the Hot-houſe, with their balls en-
" tire. The ſhoots were conveyed through holes in the front wall, and train-
" ed upwards againſt the rafters which ſupport the roof of the Hot-houſe.

" I

pruned down to twenty-two feet, (or about thirty-five eyes) and the next ſummer produced two or three bunches at almoſt every eye. I did not, however, permit more than ten bunches to remain, which, in general, were brought to a great degree of perfection, but not any way ſuperior to thoſe produced on ſtrong plants, that had been ſtopped the preceding ſummer at twenty or twenty-five feet.

After the Vine-ſhoots are ſtopped, (which is done by pinching off their tops) they will, in general, puſh out laterals at three

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" I ſhould have obſerved, that the border is compoſed of the ſame materials as " has been deſcribed for the pots, its depth five feet, and its breadth fourteen " feet: Alſo, that the Vine-ſhoots were, in length, at the time when " planted, from ten to fourteen feet.

" During ſummer, the border was kept in a moiſt ſtate, by watering it ſome- " times with rain water, and ſometimes with ſoap ſuds.

" Many of the Vines ſhowed fruit; but, according to your directions, they were " diveſted of all the bunches except one, which was permitted to remain on " a Vine, which you called the white Muſcat of Alexandria. This bunch " was cut on the 26th of November laſt, and weighed three pounds, wanting " only two ounces. The berries were, in general, very large, and of an ex- " cellent flavour.

" The Vines are, at this time, remarkably ſtrong; and, in conſideration of their " different characters and qualities, I may ſay have grown with an almoſt " equal degree of vigour.

" I have meaſured the length and girth of each Vine-ſhoot, (there being thirteen " in number) and find them, in length, from thirty-one to forty-eight feet, " and in girth, from one inch and a half to two inches."

I am, &c.

Kelmarſh, Dec. 14, 1787.

three or four eyes on the upper part of the ſhoot. Theſe laterals ſhould not be entirely taken off, as it would cauſe more eyes lower upon the ſhoot to puſh alſo. It would, therefore, be prudent to permit the firſt laterals to grow twelve or fourteen inches, and then to pinch off their tops. Theſe laterals, in their turn, will puſh out ſecondary laterals, which ſhould be pinched off at the ſecond or third joint; Thus the ſap may be diverted till the end of the ſeaſon.

In November, and the beginning of December, the leaves of the Vines change from green to beautiful variegated colours, and ſoon after fall off.

The time when the leaves of the Vine begin to fall, is the beſt ſeaſon for pruning. In the Hot-houſe, this will generally be in the month of December. In the firſt ſeaſon of pruning, ſuppoſing the Vines to have grown with an exactly equal degree of vigour, it will be proper to prune the ſhoots at every other rafter down to three, four, or five eyes, and the other to about twenty-one or twenty-two feet. Here I wiſh to be underſtood, that the above mode of pruning is only to be uſed when Vines have grown remarkably ſtrong the preceding ſummer; for when Vines have grown only moderately ſtrong, the ſhoots ſhould be pruned down to about half the above length, viz. eleven feet.

The intent of this alternate difference in pruning is, that the former ſhould make fine wood for the ſucceeding ſeaſon, and that the latter ſhould produce a crop of fruit, (after which, theſe fruit-

fruit-bearing ſhoots muſt all be cut down nearly to the bottom of the rafters); but when any of the Vine-plants appear weak, and have not made ſhoots more than eight, ten, or twelve feet long, it will be proper to prune every ſuch ſhoot down to two, three, or four eyes, without having regard to the aforeſaid direction of furniſhing every other rafter with a fruit-bearing ſhoot.

In pruning, obſerve to take off the ſhoots with a clean ſloaping ſtroke, about half an inch above the eye. Make choice of a bold eye to terminate the end of the ſhoot. After pruning, let the Vine-ſhoots be completely faſtened to the rafters, &c. and thus ends the buſineſs for the firſt ſeaſon after planting.

Vines growing in pine-ſtoves conſtantly begin to ſhoot early in the month of January; at that ſeaſon they generally make weak ſhoots, and ſhew ſmall bunches; and this proceeds from the houſe being kept warm at that ſeaſon, on account of the early crops of cucumbers, kidney-beans, &c. which are raiſed in moſt Hot-houſes. But when a Hot-houſe is kept to a proper degree of heat required for pines, during the winter months, the Vines will ſeldom begin to puſh till about the middle of February. It is uſual to ſee Vines in pine-ſtoves puſh only at two or three eyes at the extremity of the ſhoots. Theſe two or three new ſhoots taking the lead, the reſt of the eyes below will remain in a dormant ſtate, and cauſe a long ſpace of naked wood.

wood. In order to make the eyes puſh more generally, it will be proper, as ſoon as the ſap appears in motion, to keep the houſe, for a ſhort time, a few degrees warmer than uſual, viz. in the morning the Thermometer ſhould be five or ſix degrees above temperate, and in the day-time the houſe ſhould be kept as warm as the weather will permit: It will alſo be neceſſary to guard that part of the ſtem of each Vine, which is on the outſide of the houſe, againſt the approach of froſt, as one ſevere night would greatly injure, if not totally deſtroy, the hopes of the crop.

As ſoon as the ſap riſes, its motion is exceedingly rapid; and, if part of the ſtem be expoſed to the external air, a ſevere froſt would entirely ſtop its circulation. The young ſhoots and leaves inſtantly contract, and, during the froſt, appear in a ſhrivelled ſtate; to prevent which, let the part expoſed be well guarded by wrapping it round with moſs, faſtened by ſtrands of baſs matting, to a competent thickneſs. This covering ſhould be permitted to remain till the ſpring froſts are entirely over; and, when this covering is taken off, let the ſtem of the plant be made clean by well waſhing.

When Vines break out freely, they will puſh at almoſt every eye, from the top to the bottom of the ſhoots, nearly at the ſame time, and the ſhoots in general will ſhew two or three bunches each. It will be proper, however, to diveſt the Vines of their ſupernumerary ſhoots, as ſoon as can be done with propriety,

priety, as it will greatly contribute to invigorate the remaining ſhoots.

It is very eaſy to diſtinguiſh which will make the moſt promiſing ſhoots, even as ſoon as the eyes begin to break; and by the time the ſhoots get to be three or four inches long, the bunches are very diſtinguiſhable. In ſome kinds, the rudiment of the bunches ſtand ſo prominent as to be very viſible, even at the breaking of the eye.

The leaves of the young ſhoots generally ſtand ſingle at the firſt, ſecond, and third, and, in ſome kinds, at the fourth and fifth joints, and afterwards form in pairs, either with bunches or tendrils. And what is very remarkable, and differs from the ordinary courſe of nature in other ſorts of fruit, is, that the bunch is produced from the ſide of the ſhoot oppoſite to the leaf, and comes out from the naked part thereof, being neither connected with the leaf, nor the eye, nor the rudiment of either. The bunches appear at the third, fourth, fifth, and ſixth joints; from the ſixth forward, the leaves form in pairs with the tendrils. When Vines have been very vigorous, and exceedingly prolific, I have ſometimes ſeen bunches at the ſeventh, eighth, and once at the ninth joint; but an inſtance of this laſt is very rare.

When Vines ſhew bunches plentifully, it often induces the perſon intruſted with their management to leave too abun-

dant a crop; but this temptation ſhould be withſtood, as a few bunches, in an high ſtate of perfection, are preferable to numbers in a leſs: Beſides, the future ſucceſs of the Vines depends much on a judicious management in this particular: Therefore, in caſe the ſhoots, which are pruned to about twenty-two feet, ſhould ſhew two or three bunches at almoſt every eye, which they will frequently do, not more than nine or ten of the young ſhoots ſhould be permitted to ſtand, viz. the leading or top ſhoot, and four or five on each ſide; and the ſhoots that remain ſhould be diveſted of all but one bunch on each, which ſhould be the bunch which is the beſt proportioned and moſt regularly formed. The ſhoots ſhould be left at regular diſtances, that is, about four or five feet apart on each ſide: Obſerve alſo, to leave one ſhoot as near the bottom as it can be got. Theſe ſhoots ſhould be trained regularly on each ſide of the rafter, and the top of each ſhoot ſhould be pinched off as ſoon as they are grown to a ſufficient length, and begin to interfere with the adjoining ſhoots above; or, in general, let the ſhoots be ſtopped at the ſecond or third joint above the bunch.

Great attention will be required during the time the Vines are in flower. Should the weather prove hot and dry, and accompanied with briſk winds at that critical period, the berries of many kinds of grapes (particularly the blue Frontinac, white Sweetwater, and black Damaſcus) will be liable to fall off at the time of their ſetting, and the berries that remain will, in general, be very ſmall, and without ſtones. This proceeds from the

the calyx adhering to, and drying upon, the germen or rudiment of the berry, and thereby preventing its impregnation. Therefore, in order to have the crop ſet permanent, it will be proper at this period to water the roots of the Vines plentifully, to keep the houſe as cloſe as the weather will permit, and to water the walks and flues in the Hot-houſe conſtantly, and eſpecially late in the evening, when the glaſſes ſhould be immediately cloſed. The heat of the Hot-houſe will exhale the moiſture, and raiſe a kind of artificial dew, which, by falling upon the calyx, will cauſe it to expand and fall off. By this means, the important parts of fructification are ſet at liberty to perform the offices for which nature intended them, viz. the increaſe and propagation of their ſpecies. After a kind impregnation, the berries always ſwell very faſt.

It is not unuſual to ſee bunches of the white Sweetwater, and of ſome other kinds of grapes, greatly abound with ſmall berries, (which always are without ſtones) which proceeds from the above recited cauſe, and may be prevented by an aſſiduous attention to the foregoing rules.

Although grapes ſet beſt in a cloſe moiſt air, yet the Hot-houſe ſhould not be violently hot during the time of their ſetting.

When the weather is ſerene, and all circumſtances concur agreeably, tranſparent drops of dew will be obſervable in a morning on the angular points of the Vine leaves.

This is the moſt favourable indication which can happen at the critical ſeaſon of the Vine's flowering; for I have conſtantly obſerved the grapes to ſet well, and the growth of the berries to have been extremely rapid, when the Vines have been in this ſtate.

Pull off the ſuperfluous ſhoots which may break out in various parts of the old wood during the ſummer, and diveſt the young ſhoots of all their laterals likewiſe, whenever they appear. This may be done without reſerve, or having the leaſt regard to the preſervation of the wood; becauſe every Vine-ſhoot that was left more than twenty feet long at the laſt year's pruning, with intent to produce a crop of fruit, muſt be cut down nearly to the bottom at the next winter's pruning.

But all the reſt of the Vines, that were cut down at the laſt year's pruning, I will ſuppoſe one at every other rafter, muſt be trained with one ſhoot each, exactly the ſame in every reſpect as in the preceding ſeaſon.

When grapes are at the laſt ſwelling[q], and till they are nearly on the point of being ripe, the Vines will require a plentiful ſupply of water, and eſpecially if the ſeaſon ſhould prove hot and dry. Few plants perſpire ſo abundantly as the Vine,

[q] The laſt ſwelling of grapes commences at the time they begin to be tranſparent. At this period, the *red*, *black*, &c. grapes begin to change from green to red, black, &c. reſpectively.

Vine, and more particularly when it is under glaſſes. The ſituation of Vines, trained in pine-ſtoves, may be conſidered exactly in a ſimilar ſtate with Vines growing in very hot climates. Near the tropics, for inſtance, we are told that at the Madeiras they do not attempt to plant vineyards, even where both ſoil and ſituation are the moſt deſirable, without a command of water[r], the Vines there requiring a conſtant ſupply of

[r] "The great produce of Madeira is the wine, from which it has required fame and ſupport. Where the ſoil, expoſure, and *ſupply of water* will admit of it, the Vine is cultivated. The incloſures of the vineyards conſiſt of walls, and hedges of prickly pear, pomegranates, myrtles, brambles, and wild roſes. Walks of about five or ſix feet wide interſect each vineyard, and are included by ſtone walls two feet high. Along theſe walks, which are arched over with laths about ſeven feet high, they erect wooden pillars at regular diſtances, to ſupport a lattice-work of bamboos, (a ſort of cane) which ſlopes down from both ſides of the walk, till it is only a foot and a half or two feet high, in which elevation it extends over the whole vineyard. The Vines are, in this manner, ſupported from the ground, and the people have room to root out the weeds which ſpring up between them. In the ſeaſon of the vintage they creep under this lattice-work, cut off the grapes, and put them into baſkets: Some bunches of theſe grapes I ſaw, which weighed ſix pounds and upwards. This method of keeping the ground clean and *moiſt*, and ripening the grapes in the ſhade, contributes to give the Madeira wines that excellent flavour and body for which they are remarkable.

"*The water* is conducted by wears and channels into the vineyards, where each proprietor has the uſe of it for a certain time; ſome being allowed to keep a conſtant ſupply of it, ſome to uſe it thrice, others twice, and others only once a week. As the heat of the climate renders this ſupply of water to the vineyards abſolutely neceſſary, it is not without great expence that a new vineyard can be planted; for the maintenance of which, the owners muſt purchaſe water at a high price."

Forſter's account of Cook's voyage, vol. i. page 23.

of that element, and eſpecially at the time they are loaded with fruit.

If

A frequent ſupply of water is not only profitable to the Vine, but alſo equally beneficial to other kinds of fruit-trees growing in warm climates, as is evinced by the following extract from Sir William Hamilton's elegant account of the late earthquakes in Italy, communicated to the Royal Society in the year 1783.

" From this place * to Reggio the road on each ſide is covered with *villas* and orange groves. I ſaw not one houſe levelled to the ground; but perceived that all had been damaged and were abandoned; and that the inhabitants were univerſally retired to barracks in theſe beautiful groves of orange, mulberry, and fig-trees, of which there are many in the environs of Reggio. One that I viſited, and which is reckoned the richeſt in all this part of *Magna Grecia*, is about a mile and a half from the town of Reggio; and, what is remarkable, belongs to a Gentleman whoſe name is Agamemnon. The beauty of the Argrume (the general name of all kind of orange, lemon, cedrate, and bergamot trees) is not to be deſcribed; the ſoil being ſandy, the expoſition warm, and *command of water*, a clear rivulet being introduced at pleaſure in little channels to the foot of each tree, is the reaſon of the wonderful luxuriancy of theſe trees." To which I ſhall only add, that every body knows the vaſt uſe of canals in the cultivation of fruit-trees, in the land of Egypt, at this day. " Don Agamemnon aſſured me it was a bad year when he did not gather from his garden (which is of no great extent) 170,000 lemons, 200,000 oranges, (which I found as excellent as thoſe of Malta) and bergamots enough to produce 200 quarts of the eſſence from their rinds. There is another ſingularity in theſe gardens, as I was aſſured, every fig-tree affords two crops of fruit annually; the firſt in June, the ſecond in Auguſt.

" Silk and eſſence of bergamot, oranges, and lemons, are the great articles of trade at Reggio. I am aſſured that no leſs than 100,000 quarts of this eſſence is annually

* *Torre del Pezzolo.*

If the foregoing directions have been ſtrictly attended to, the bunches of grapes will, in general, be large and fair, with well-ſwelled and high-flavoured berries.

After

---

annually exported. The fruit, after the rind is taken off, is given to the cows and oxen; and the inhabitants of this town aſſure me, that the beef, at that ſeaſon, has a ſtrong and diſagreeable flavour of bergamot."

I ſhall beg leave to make two obſervations on the foregoing accounts:

Firſt, I preſume that water is not admitted either into the orchards or vineyards during the winter, as a wet ſoil would prove highly injurious to thoſe kinds of fruit-trees at that ſeaſon. It is, on this account, I have directed drains for the purpoſe of taking off the ſuperfluous water at the bottom of the Vine-border.

And ſecondly, as too much water at the time of the ripening of the fruit would debaſe its flavour, I conclude, that if Sir William Hamilton and Mr. Forſter had made inquiry, they would have been informed by the reſpective inhabitants, that the waterings are leſs frequent at the time of gathering the fruit and the ſeaſon of the vintage, than at an earlier period.

Since the foregoing notes were written, I have met with the following curious account, which ſhews the neceſſity and great importance of a plentiful ſupply of water in vineyards, &c. in warm climates.

"Water is the great agent, the primum mobile of all productions in this country; every thing languiſhes, and ſoon is parched up, without an ample ſupply of it; abundance of rain ſecures both a plentiful harveſt and a copious vintage.

"Whenever a ſpring breaks out, the King's people ſeize upon it, and allot to each landholder a proper hour for letting the water upon his grounds. It is of ſo much conſequence, that the value of a guinea has been paid for an hour extraordinary."

Swinburne's Travels through Spain, page 113.

As

After the fruit is cut, the Vines will require no other management till the pruning ſeaſon, but taking off their laterals, in the manner already pointed out for the preceding year [s].

At

[s] As it frequently becomes neceſſary to convey ripe grapes to a remote diſtance, and as this delicate fruit is very liable to receive injury by improper methods of packing, I hope the following information on this ſubject may be of uſe to many of my readers.

When grapes are intended to be conveyed by water, they may ſafely be packed in boxes with ſand. Firſt, put a quantity of ſand ſufficient to cover the bottom of the box about one inch; upon this lay your bunches in a courſe, or layer, almoſt cloſe together, only take care that none of the berries touch the ſides of the box. Upon this layer of bunches pour in dry ſand, till the grapes are covered about half an inch; then lay in more grapes and ſand alternately, till the box is filled.

Grapes thus packed will travel ſafe, and by being almoſt excluded from the air, will keep freſh and good a long time. Grapes are conſtantly thus brought into this country from *Portugal*, and they often arrive in pretty good perfection. But now conſidering the expence from weight in this mode of packing, it would be extravagant to uſe it when this fruit requires to be ſent a conſiderable diſtance by land carriage.

Grapes will alſo travel with ſafety, by being packed in a box with any ſmall bright ſeed. Clover ſeed is very proper for this purpoſe; but the expence attending this mode of conveyance is alſo very conſiderable, both on account of the great value of the ſeed, and alſo in reſpect of its weight. I would therefore recommend the packing grapes in oat-chaff, as the moſt eligible in all reſpects.

Grapes have ſometimes been packed in tow, wool, cotton, and paper ſhavings; but I find, by experience, that oat-chaff is greatly preferable. Oat-chaff is not only exceedingly light in its nature, but is alſo poſſeſſed of a kind of elaſtic force.

Pleaſe to obſerve, that when oat-chaff is uſed, it ought not to have any diſagreeable ſmell; it ſhould alſo be cleanſed of all impure matter; and the grapes ſhould

be

At the next winter's pruning, all the Vines that produced a full crop of fruit ſhould be cut down nearly to the bottom, that is, to the lowermoſt ſummer ſhoot, which ſhoot alſo ſhould be cut down to the firſt or ſecond eye.

But all thoſe Vines, that were cut down nearly to the bottom the preceding ſeaſon, and which will, in general, have made

be perfectly dry at the time of packing, and the bunches well examined, that if there be any berries either decayed, cracked, or bruiſed, they may be clipped off the bunch.—Then carefully tie each bunch in a bag made of ſilver or gauze-paper, its ſize being proportioned to that of the bunch.

In packing proceed thus: Firſt put a good quantity of chaff into the box, then carefully lay your grapes in a kind of courſe, or layer; a ſmall quantity of chaff ſhould be lightly preſſed between each bunch, as alſo between the bunches and the ſides of the box.—Then add more chaff, preſs it lightly, and lay in a ſecond courſe, or layer, of bunches: Grapes, however, packed in this manner, ought not to be more than two courſes deep, becauſe the bottom bunches would be liable to be injured by the weight above.

I muſt obſerve, that the courſe of chaff between the layers of the bunches, and likewiſe at the top and the bottom, ought, when it is well preſſed down, to occupy a ſpace of about two or three inches.

I have for many years thus ſent grapes from Welbeck to London, (a diſtance of about 150 miles) and when the boxes have been put either in the inſide, or upon the body of the coach, the grapes have generally gone without injury, and even preſerved their bloom: Nor do they require dipping in water, which is a neceſſary operation when grapes are ſent in ſand. However, I muſt ſay, that when boxes go in the coach boot, (where the motion is more violent) the fruit will commonly ſpoil; for which reaſon, I have boxes made exactly to ſuit the ſeats of the ſtage coaches.

very ſtrong wood, muſt be left to the length of twenty-one or twenty-two feet each, with intent to produce a full crop of fruit the following ſeaſon.

The management of the Vines the next ſummer, will, in many inſtances, be nearly the ſame as in the preceding one. Only let it be conſidered, that as the Vines have increaſed in ſtrength and ſize, they will, conſequently, be enabled to produce and ſupport a larger burden of fruit.

The crop ſhould, at all times, be proportioned to the ſize and vigour of the tree, and that in every ſtage; but eſpecially while the Vines are young, it will be adviſable to uſe great moderation as to the number of bunches which are to be allowed to go on to maturity.

The ſhoots now may be laid rather cloſer together than in the preceding ſeaſon, and two bunches may be permitted to remain upon ſuch ſhoots as are ſtrong and vigorous; and eſpecially, of thoſe kinds that do not produce large bunches. It will be proper, however, that the berries of the bunches, in general, ſhould be well thinned[t]. This work is beſt performed at the time when the berries are about the ſize of ſmall ſhot. Great addreſs is required in the performance of this operation;

[t] In order to thin grapes with propriety, a proper pair of ſciſſors ſhould be provided. The blades ſhould be made with exceeding ſharp points, and not more than one inch and a half long: The ſhanks about four inches long and quite ſtraight: The eyes ſufficiently large to contain a man's thumb and two fingers.

operation; and particularly when the bunches are extremely large. The firſt thing to be done is, to extend both the main ſhoulders, as alſo the leſs projecting parts of the bunch, which parts ſhould be ſuſpended by ſmall ſtrings, and faſtened to the rafters, or glaſs-caſe frames above. Every projecting part of the bunch ſhould be raiſed to an horizontal poſition; and, when the berries are fully ſwelled, they will retain that poſition even after the ſtrings are cut.

In thinning of the berries, great care ſhould be taken to leave all the moſt projecting ones on every ſide of the bunch; ſince by this means the dimenſions of the bunch will not be diminiſhed.

In thoſe kinds of grapes that produce very cloſe-growing bunches, it will be neceſſary to clip out more than two thirds of the berries; but in ſome kinds, one half; and, in the looſe-growing kinds, with long foot-ſtalks, the taking out one third is generally ſufficient.

By this mode of thinning, the remaining berries will, in general, ſwell well, and grow to a very great ſize, and will not be ſubject to rot, as is generally the caſe with grapes in a Hot-houſe, when the berries are permitted to grow cloſe, and to become wedged together.

In training the ſhoots of the Vines, I have hitherto taken notice only of furniſhing the rafters, or roof, of the Hot-houſe;

but there is yet another important object that demands our conſideration, which is, a further advantage that may be gained by furniſhing the back wall. In ſuch Hot-houſe, as the ſubjoined plan repreſents, there is a ſpace of nine feet clear above the flue in the back wall; the length of the ſaid wall being (nearly) one hundred feet, there is, of courſe, a ſpace containing almoſt nine hundred ſquare feet, and certainly there is no part of a Hot-houſe that can be rendered uſeful, which ſhould remain unoccupied. A ſpace, therefore, ſo conſiderable as the above, undoubtedly merits our attention.

Now, in order to furniſh the back wall, let every fourth or fifth Vine-plant be trained in one ſhoot quite to the top of the rafter; then direct the ſhoot ſideway ten or twelve feet along the top of the back wall. At the winter's pruning, bring down that part of the ſhoot perpendicularly, which, in the preceding ſeaſon, was trained ſideway, and cut it off at one foot above the top of the flue. The next ſpring, encourage only two ſhoots from the two extreme or lowermoſt eyes of each ſhoot ſo brought down, and train them in an horizontal direction one foot above the top of the flue. Theſe ſhoots will, however, grow with greater readineſs, if they be trained upwards during the ſummer; and in ſuch caſe they may eaſily be brought to the deſired poſition at the next winter's pruning. When the pruning is finiſhed, and the ſhoots brought down and faſtened in their proper poſition, they will form againſt the back wall the following figure ⊥, viz. the figure of the letter T reverſed.

In

EXPLANATION to Plate I. p. 92.

a a Pits for fruiting Pine-plants.

b b Pits for ſucceſſion, or young Pine-plants.

c c Front wall.

d Fire-place partly in the front wall, which is worked only in very cold weather.

e e e Flue.

f Ciſtern which receives the water that falls on the roof of the Hot-houſe.

g g g g g g g Walks in the ſtove.

h h Small porches which cloſe with double doors at the entrance of the ſtove.

i i Fire-places in the middle of the back wall, which communicate with the flues *k k*

l l Fire-places at the ends of the back wall, which communicate with the flues *m m*.—N. B. The flues *m m* make one return, as repreſented in the ſection.

n n n Cloſe fire-houſes.

o o Open ſheds.

p Pipe that conveys the water to the ciſtern.

q Level of the border in front of the ſtove.

r Foundation of the front wall.

s Apertures, or holes through which vines are conveyed.

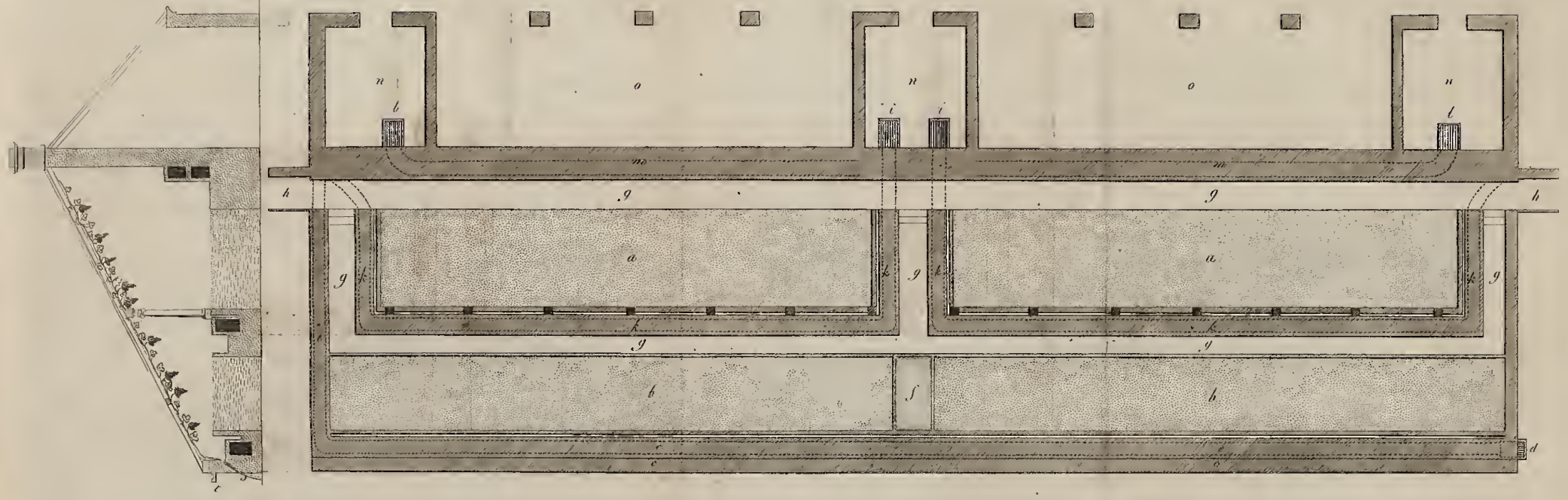
t Stone in front, with a groove to receive the water that falls from the roof.

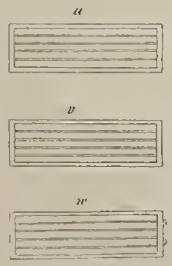
u v w Top, middle, and lower lights.

A PLAN of an approved PINE and GRAPE STOVE.

Section

Ground Plan





Elevation of the Front Wall

Published 2 Jan.y 1.st 1790, by Wm. Speechly, as the Act directs.

Wm. Speechly del.

In the next ſeaſon, the horizontal ſhoots will produce new wood from almoſt every eye, provided all the ſhoots be pinched off from every other part of theſe plants as ſoon as they appear. Lay in the young wood at proper diſtances, that is, the ſhoots from one to two feet apart, according to the kind of Vine to be trained, whether it produces ſmall or large leaves: But of this I ſhall have occaſion to treat more particularly hereafter.

The ſhoots muſt all be trained in a perpendicular direction; and provided they are ſtrong and vigorous, may be permitted to grow to the length of five or ſix feet before they are ſtopped; but theſe ſhoots muſt all be cut down to two or three eyes at the next winter's pruning.

Only one ſhoot ſhould be permitted to riſe from each ſpur the following ſeaſon; and although they will, in general, be ſufficiently ſtrong, and produce two or three bunches apiece, yet only one bunch ſhould be ſuffered to remain upon each ſhoot: The remaining bunches will then be large and fine, and the wood alſo will be greatly benefited by this mode of practice.

Theſe ſhoots muſt be pruned next winter very differently from the preceding. One ſhoot muſt be left four feet, that next it only a few inches long, and ſo on alternately, throughout the whole length of the wall. The reaſon for this alternate difference in pruning, and for the continuation of the fu-

ture

ture management of the Vines growing againſt the back wall, will be given, when I come to treat of Vines trained in the Vinery, the method of practice in both ſituations being nearly ſimilar.

I ſhall now return to the conſideration of the management of thoſe Vines which are intended to be trained againſt the rafters, or roof, of the houſe.

Theſe Vines will require a management, in future ſeaſons, nearly ſimilar to that already deſcribed; and although it will not be adviſable to prune every other Vine-plant down ſo near to the bottom of the rafters, as has been directed for the two preceding ſeaſons, yet it will be frequently found neceſſary to cut an old ſhoot down nearly to the bottom, that is, down to the lowermoſt ſummer ſhoot, as near to the bottom of the rafter as can be. And the ſide-ſhoots of the Vines on the remaining rafters ſhould not be permitted to ramble over the adjoining lights; but at the end of every ſeaſon it will be proper to cut ſuch ſhoots down to the ſecond or third eye next the old wood, provided the bottom eyes are bold and ſtrong. This muſt be done not only in order to ſtrengthen the Vines, but alſo to prevent the roof of the houſe from being too much crouded with old wood.

And here it is neceſſary to obſerve, that, while the Vines are young, one rafter will afford ſufficient room for a Vine-plant; but

but when the Vines are become older, they will require a larger ſpace; and more eſpecially, Vines of the ſtrong growing kinds, which produce large leaves and large bunches: It will be proper, therefore, to train ſhoots ſideways on the wall plate, from the ſtem of the plant, immediately at its entrance into the houſe: Theſe ſhoots ſhould be carried up the adjoining rafters, and the plants, growing againſt ſuch rafters, muſt be taken entirely away; except it ſhould happen that the plant growing againſt ſuch rafter is trained forward to furniſh the back wall.

In the large Hot-houſe at Welbeck, Vines are trained in the manner here deſcribed. Some of the plants occupy two, three, and four rafters each. A large Vine of the Syrian grape furniſhes five rafters, and each branch being engrafted with a different ſort, the plant, of courſe, produces as many varieties.

When a Vine-plant occupies two or more rafters, it will be right to prune occaſionally, and particularly while the Vine is young, one or more of ſuch Vine-ſhoots down nearly to the bottom of the rafter. This will not only contribute to ſtrengthen the plant, but will alſo afford means to furniſh the rafters with a ſucceſſion of young wood.

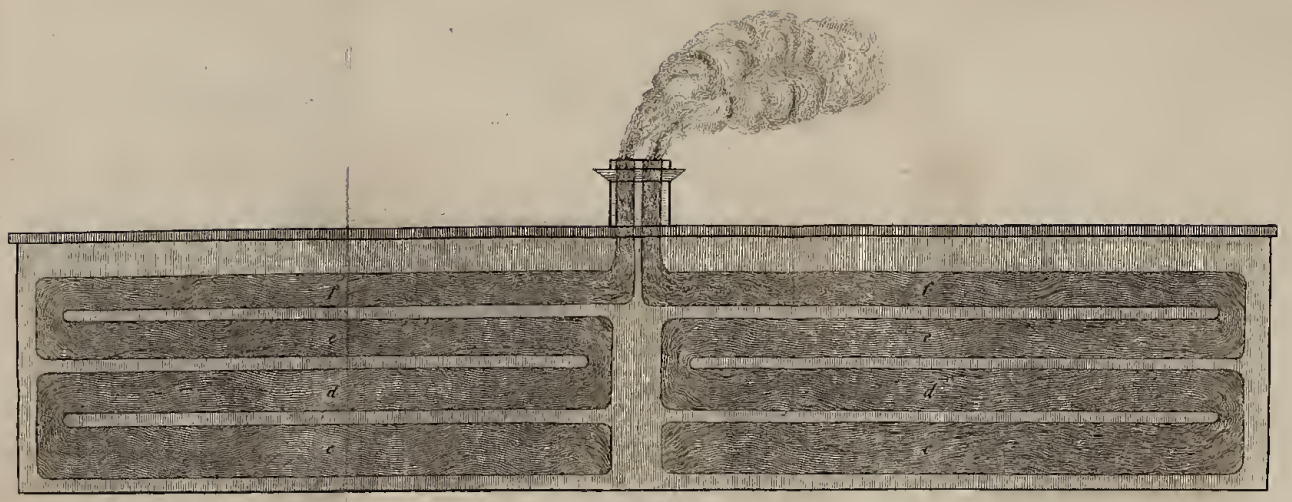
When Vine-ſhoots are conducted to different rafters, in the manner above deſcribed, every ſhoot may be conſidered as a ſeparate plant; and, whether grafted or otherwiſe, muſt be trained up the rafter in one ſhoot; and from that time it will require a ſimilar management to that already laid down.

Having

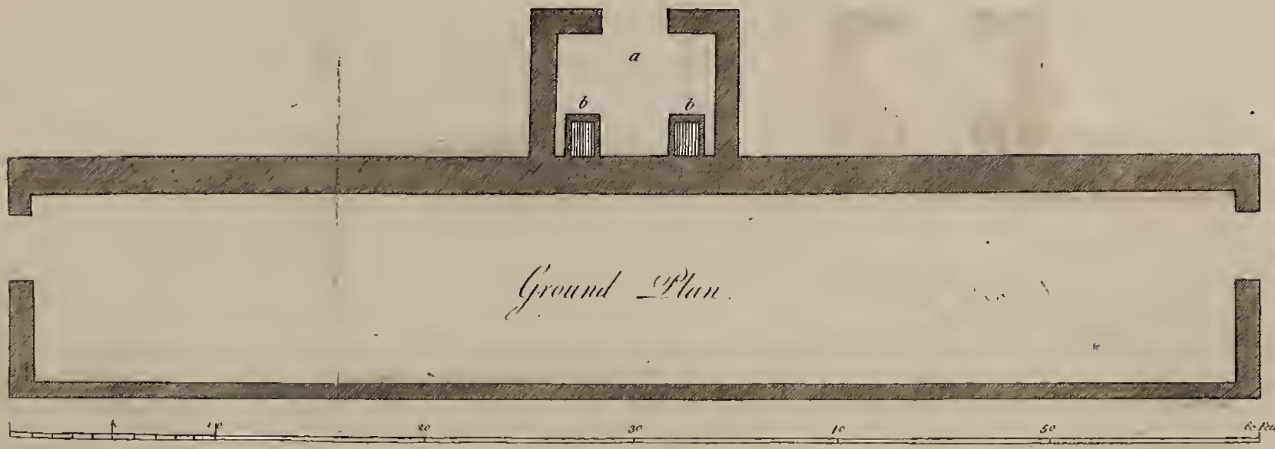
Having given full Inſtructions for the preparation of the ſoil, and deſcribed the various methods of propagating the Vine, together with rules for its future management in the Hothouſe, I ſhall, in the next place, endeavour to give proper directions for the erection of a *Vinery*; and afterwards ſhall ſubjoin a few hints and obſervations reſpecting the culture and management of the Vine, when planted in different departments.

ON

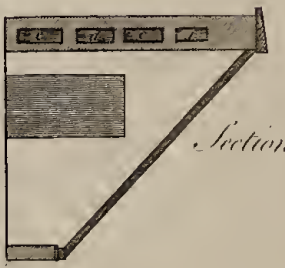
Section of a Flued Wall.



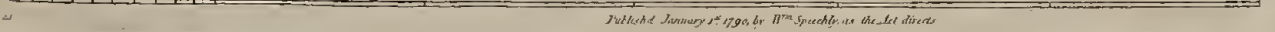
Elevation.



Ground Plan.



Section.



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EXPLANATION and OBSERVATIONS to Plate II. p. 97.

a Fire-houſe.

b b Fire-places, which communicate with the flues *c c*

c c Firſt flues.

d d Second flues.

e e Third flues.

f f Fourth flues.

*** One fire ought not to be allowed to work more than about thirty feet in length, becauſe by the time it has made four returns, (viz. 120 feet) its heat is generally nearly ſpent. As the heat decreaſes proportionable to the diſtance from the fire-place, the diminiſhing of the dimenſions of the flues is obvious. On this account, ſome Perſons who give deſigns for building of Hot-walls, recommend a brick on edge inſtead of a brick in breadth, for the front of the two uppermoſt flues. When this expedient is intended, it will be proper to have narrow bricks, of the thickneſs of common bricks, made on purpoſe to ſuit the work —But when the wall is intended to be drawn with ſtucco, this laſt precaution will be unneceſſary.

ON THE

VINERY.

BOOK II.

THERE are various methods of conſtructing Vineries. Every large and commodious building, appropriated ſolely to the purpoſe of producing grapes, is generally termed a Vinery, while thoſe erections, of leſs dimenſions, are called Grape or Vine-frames.

I ſhall firſt treat of the moſt uſeful form.

Flued walls of about twelve or fourteen feet high, in a direction from Eaſt to Weſt, with a roof and glaſs lights covering a border of about ten feet wide on the South ſide of the wall, compoſe a proper receptacle for the production of grapes, or a Vinery.

It is uſual to have upright glaſſes, of about two and a half or three feet high in front, to ſupport the roof; and this is very proper when Vines are intended to be forced at an early ſeaſon, becauſe it admits the ſun and light to the border, which is generally occupied with various kinds of low-growing vegetables; but where grapes are not wanted at an early ſeaſon, a conſi-

derable expence may be ſaved, as, in that caſe, a low wall in front will anſwer equally as well. The ſhade of this wall would be very injurious to the border, if the Vines were to be forced early in the ſpring; but the meridian altitude of the ſun, in the beginning of ſummer, renders it no way prejudicial at that ſeaſon.

Suppoſing a flued wall, twelve feet high, the breadth of the border ten feet, and the height of the upright glaſs frame, or wall, in front, three feet, the roof will then form an angle of about forty-three degrees. Experience ſhews this to be a proper pitch for Vines forced after the vernal equinox. I mention this circumſtance, becauſe ſome perſons, who give deſigns for buildings of this kind, lay ſo great a ſtreſs on this point, as to pronounce a Vinery, or Peach-houſe, incapable of anſwering the intended purpoſe, ſhould the pitch of the roof happen only to vary a degree or two from their favourite angle. Indeed, if we ſuppoſe the ſun's meridian altitude always the ſame, ſuch an objection would reſt on a ſolid foundation; but we know that it not only varies daily, but many degrees in a ſhort ſpace of time [a]; ſo that if the pitch of the roof depended on ſo nice a point, what

[a] At London, latitude 51. 30. N. in the ſummer ſolſtice, (June 22) the meridian altitude, or ſun's place above the Horizon at noon-day, is 63½ degrees.—But at the winter's ſolſtice, (December 22) it is only 16½ Degrees above the Horizon.

what might be deemed right in the early part of the ſpring, would certainly be wrong later in the ſummer.

In Holland, it is cuſtomary to begin to force Vines in November, in order to have ripe grapes early in the ſpring. In theſe frames, uſed for winter forcing, it is found neceſſary, that the glaſs frames ſhould be in an almoſt perpendicular direction. The Dutch have alſo a method of forcing Vines planted in the open ground, the ſhoots of which are trained in an horizontal poſition, about eighteen inches from the ground. Over the Vines, which are forced in the ſummer, they put frames nearly as flat as thoſe commonly made uſe of for melons.

Hence it follows, that the conſtruction of the different frames, or buildings, for the purpoſe of producing grapes, ſhould not only vary according to the quantity required, but alſo according to the ſeaſon in which that fruit is intended to be produced.—The roof ſhould be ſteep for early forcing, and flatter for the ſummer.

As I have given a plan and explanation of a Vinery, which has conſtantly ſucceeded in producing good crops of grapes for more than twenty years, it may ſeem unneceſſary to ſay more upon this head; for the ſatisfaction, however, of thoſe who wiſh to proceed on a leſs extenſive and more œconomical ſcale, I ſhall ſuggeſt a few more hints upon this ſubject in another place.

The conſtruction of the building being determined, the next objects which demand our conſideration are, the compoſt proper for the border, and the method of raiſing Vine-plants to furniſh the wall.

But then, as I have, in the former part of this work, explained myſelf fully on both theſe heads, a repetition of them here would be altogether needleſs and ſuperfluous.

We will then ſuppoſe both the wall and border to be complete, and plants wherewith to furniſh them ready.

Vine-plants raiſed in pots will ſometimes make a good progreſs the firſt ſummer, when planted out for good about the month of June: But it is hardly poſſible to get the border in proper order for planting the ſame ſummer that the wall is built, becauſe the ingredients of which it is compoſed require much time, and a winter's froſt is of great uſe in cauſing them to incorporate, meliorate, and ſettle. The ſame care will, therefore, be required in preſerving the plants through the winter, as has already been recommended for thoſe intended for the Hot-houſe. And ſo at the pruning ſeaſon, the Vine-plants intended for the walls ſhould have been previouſly pruned down to nine or ten inches, as has been already directed.

The beginning of March is a fit ſeaſon for planting the Vines: But the choice of proper kinds, which has been already

already treated of, and the diſtance at which they ſhould be planted, ought previouſly to be aſcertained.

It ſhould ſeem, that ſufficient attention had not hitherto been given to the latter of theſe heads of conſideration, becauſe we find it is the common practice to plant all the different ſorts at the ſame diſtances. Whereas the different degrees of vigour, and manner of growing of the different ſorts, require larger or leſs ſpace to be allowed, in proportion to the natural character and qualities of the plant.

It happens but too often, that the ſpace allowed to Vines is too ſcanty and inſufficient, as we ſeldom ſee the diſtance between plant and plant greater than three or four feet. Now it is certain that a wall will ſoon get furniſhed by this cloſe method of planting, and that tolerable crops of grapes may alſo be produced in a few years: But if Vine-plants be permitted to remain many years ſo cloſe together, they will be cramped in their growth for want of room, and thereby rendered leſs productive.

Suppoſe a wall twelve feet high, and the Vines planted even five feet apart, there will then, upon an average, be only ſixty ſquare feet for each plant; and yet we know that it is poſſible for a Vine to occupy more than twenty times that ſpace.

I ſhould recommend a ſpace of from ſix to twelve feet between plant and plant, according to the ſorts of Vines intended

to

to be planted, that is, about ſix feet for the weak and delicate-growing kinds, and twelve feet for thoſe that grow robuſt and ſtrong. If theſe various ſorts were judiciouſly mixed at the planting, about nine feet may be allowed upon an average.

The Vines thus planted, are intended, in due time, entirely to cover the wall; but as it is very deſirable to obtain a crop of grapes as ſoon as poſſible, it will be eligible and expedient to plant other Vines between for immediate bearing. But now as theſe of the intermediate plantation muſt be trained very differently from the former, I ſhall, for diſtinction ſake, call them *temporary* plants, and the others *principals*. One temporary plant ſhould be placed in the middle of every ſpace between the principals. Plants that have been two or three years in pots, and that will come into immediate bearing, are moſt proper for this purpoſe. They muſt all be planted with the ſame care as has already been recommended for Vines in the Hot-houſe, and arranged cloſe to a trellis fixed in the wall, and to which their ſhoots are to be trained.

In planting the principals, it will be proper to ſet the plants ſo, that the two uppermoſt eyes in each may ſtand fair for the ſhoot's going to the right and left: The neceſſity of this caution will be clearly explained, when I come to treat on the method of training.

Hitherto I have only taken notice of planting the flued wall, but it will be neceſſary to obſerve, that a few plants may be ſet againſt

againſt the front wall alſo, in order to their being trained up the rafters. Theſe may either be planted within or on the outſide of the Vinery, as the front wall ſhould ſtand upon arches, to afford the roots of all the Vines an opportunity of extending their fibres to a border on the outſide. If planted on the outſide, the Vine-ſhoots muſt be taken through ſmall holes made for that purpoſe under each rafter. Great care, however, ſhould be had reſpecting the future management of theſe, to prevent their injuring the Vines of the flued wall; but of this I ſhall have occaſion to ſpeak more fully elſewhere.

As ſoon as the Vines are planted, the border ſhould be pricked over about three or four inches deep, and made ſmooth: Then the glaſſes ſhould be put on, as it is of conſequence that the Vines ſhould ſhoot off with vigour. Gentle fires ſhould be made in an evening, plenty of air given in the day-time, and eſpecially when the weather is fine and clear.

The Vines will immediately begin to grow: The principals muſt be diveſted of all the ſhoots but the two uppermoſt, which are to be trained ſideway to the right and left: Theſe ſhoots, however, are not to be brought down to an horizontal poſition till the next winter's pruning.

As the temporary plants are intended to occupy the upper part of the wall, while the principals are furniſhing it below, let the ſhoots of thoſe be trained upwards for that purpoſe.

The

The Vines planted in front muſt be trained with one ſhoot only from each plant, exactly the ſame as has been directed for the Vines in the Hot-houſe.

If any of the Vines ſhew fruit, the bunches ſhould be pinched off as ſoon as they appear.

From the time the plants begin to grow, they will require a little water once or twice a week, according to the ſtate of the weather.

As the ſhoots advance, they ſhould be regularly faſtened to the trellis and rafters: They ſhould alſo be diveſted of their tendrils and laterals whenever they appear. It will be neceſſary to hoe and rake the border, in order to clear it from weeds and other noxious matter, every eight or ten days. For to keep the ſurface clean and conſtantly ſtirred, is of infinite advantage to the Vines, both on account of the ſun's reflection, and as contributing to the greater purity of the air. If the border be permitted to grow foul, covered with weeds, moſs, and the like, a moiſt and hurtful vapor will be generated, which will greatly retard the growth of the Vines.

There will be no neceſſity to continue the fires longer than the middle of April, unleſs the weather ſhould be uncommonly ſevere. And in the month of May plenty of air ſhould be given

given in the day-time; a little at night alſo, except there ſhould be an appearance of froſt.

In the beginning of June, ſuppoſing the ſpring froſts over, and the weather favourable, the glaſſes may be entirely taken off.

While the glaſſes are off, the border ſhould be kept clean and the Vines conſtantly watered, if the weather prove hot and dry. And moreover, as the ſhoots advance, they ſhould be kept regularly faſtened to the trellis.

If the foregoing directions be duly obſerved, the Vines may be reaſonably expected to make a good progreſs the firſt ſummer. But as it is of great conſequence to have the wood perfectly well ripened, and as it is very liable to be injured by early autumnal froſts, it will be adviſable to put on the glaſſes in the beginning of September: Should the weather prove mild and fine, this, however, may be deferred till the latter end of that month.

When the glaſſes are put on, let plenty of air be admitted both day and night, till the end of October; except the weather proves very ſevere, a little froſt at night will not injure the plants. It is a material point that the leaves ſhould be kept upon the Vines as late in the year as poſſible; for as long as the leaves are retained, the wood continues to receive benefit.

As ſoon as the leaves are fallen, it is a proper time to prune the Vines; but as the method of training Vines, which I am now going to enter upon, is quite new to the public, and becauſe it pleaſes more, and makes a greater impreſſion upon the mind, to ſee things repreſented than to read a deſcription of them in words, I have given a plan exhibiting the principals in ſix different ſtages. The temporary plants not requiring any particular mode of training, are purpoſely omitted in this ſketch.

The ſhoots of the principals muſt all be cut down to two, three, or four eyes, making choice of the beſt and boldeſt eye to terminate the ſhoot. The ſhoots ſhould be brought down as near to an horizontal poſition, as can be without ſtraining, and then tied to the trellis.

It is eaſy to conceive, that every principal will then form a figure reſembling the letter T. See plate iii. fig. 1.

If the temporary plants ſhould be large, and been trained in pots before planting, which I have already obſerved, they will, in general, have made good wood. The ſhoots of theſe may be pruned down to from ſix to fifteen inches each, according to the ſtrength of the ſhoot, i. e. a weak ſhoot to ſix inches, if moderately ſtrong to nine or ten inches, and if very vigorous to fourteen or fifteen inches. When pruned, the ſhoots ſhould be faſtened to the trellis in regular order.

The

Fig. 1.

Fig. 2.

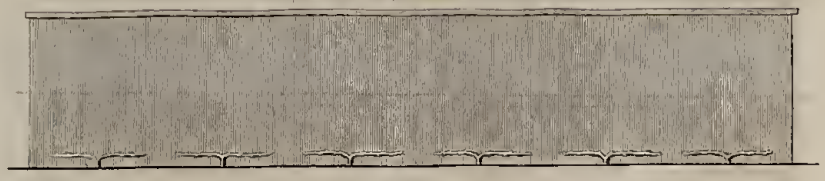


Fig. 3.

Fig. 4.

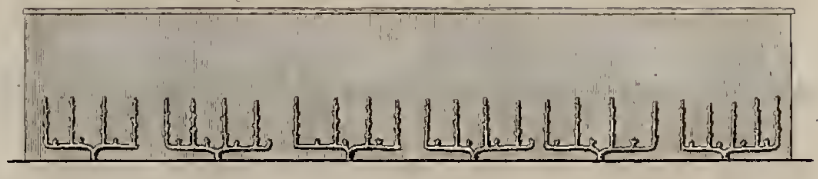


Fig. 5.

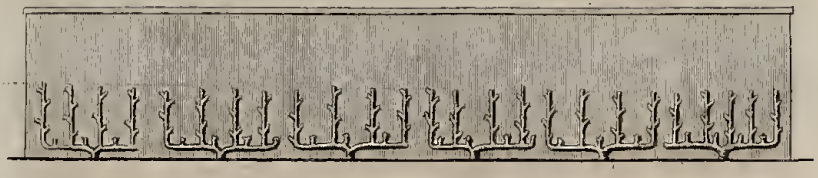
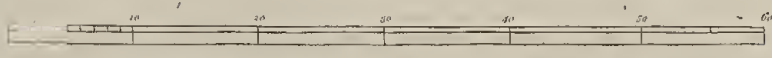


Fig. 6.



W. Speechly Del.

Basire Sc.

Six different Stages of Vines trained against a Wall.

Published January 1st 1790.

by Wm. Speechly as the Act directs.

The plants againſt the rafters muſt all, without exception, be pruned down to the very bottom of each, that is, each ſhoot muſt be cut ſo low, as only juſt to admit of length ſufficient for its being faſtened to the bottom of the rafter.

It will be prudent to let the glaſſes remain on, a few days after pruning, and eſpecially if the weather ſhould be either ſevere or rainy. After the glaſſes are taken off, it will be neceſſary to lay a little mulſhing round the bottom of each plant, to prevent the froſt from injuring the roots: It is neceſſary alſo to obſerve, that dung newly made, or too much decayed, is not ſo proper for this purpoſe, as dung that is in a dead ſtate and rather ſtrawy. Dung from the outſide of hot-beds made in the ſpring, is, in general, very ſuitable for mulſhing. This ſhould be laid to the diſtance of two feet every way from the ſtem of the plant, and to the thickneſs of three or four inches. A little very rotten dung may be thinly ſpread all over the border. This completes the buſineſs of the firſt ſeaſon.

As the Vines will require the ſame management the ſucceeding year, a repetition of theſe directions will be unneceſſary.

The principals muſt again be trained with two ſhoots only from each plant, and the Vines at the rafters with one ſhoot each, the ſame as in the preceding ſeaſon. The temporary plants will probably ſhew much fruit, but all the bunches ſhould be pinched off as ſoon as they appear, becauſe the Vines

would require a different management, in order to ripen the grapes, which would hardly be worth the additional expence of fuel, &c. Beſides, the Vines will not make near ſo great a progreſs, if the fruit ſhould be permitted to remain.

If no unforeſeen accident happens, the Vines will, in general, make extraordinary ſtrong wood the ſecond ſeaſon, and the ſhoots may, in general, be ſuffered to grow almoſt to the top of the wall before they are ſtopped.

The ſecond year's pruning muſt be performed very differently from that of the preceding one; the ſhoots of the principals muſt all be brought down to an horizontal poſition, and pruned in ſuch a manner as to leave a ſpace of twelve or fourteen inches between plant and plant. See plate iii. fig. 2.

As the temporary plants are intended only to produce fruit for a certain period, namely, till the principals get ſufficiently large to occupy the whole of the wall, they muſt be pruned for fruit accordingly. A ſtrong ſhoot may be pruned to from fifteen to twenty eyes for bearing; between every two bearers, a ſhoot ſhould be pruned down to two, three, or four eyes, in order to keep up a ſucceſſion of bottom-wood, till the principals furniſh a full ſupply all along the bottom of the wall.

If all the Vines at the rafters have grown equally ſtrong, it will be proper to prune every other plant down to three or four

four eyes, and the reſt to from twenty to twenty-five eyes each, the latter operation being intended to produce fruit, and the former to make bearing wood againſt another year.

By the end of the ſecond year after planting, the Vines will have extended their roots to almoſt every part of the border: And as at this tender age the roots are very liable to receive injury by ſevere froſts, I would adviſe the borders to be covered the thickneſs of three or four inches, with long dead ſtrawy dung. Dung taken from the outſides of old hot-beds is exceedingly proper for this purpoſe. There is a kind of ſpirit in dung which produces warmth, and thereby prevents the froſt from penetrating the ground, eſpecially if the dung be laid to a conſiderable thickneſs.

This method of covering the border ſhould be practiſed every winter, while the Vines are young; but then the dung ſhould conſtantly be removed from the border as ſoon as the winter froſts are over: A little of the very rotten dung may be permitted to remain, as this, with the addition of a little rotten cow-dung, ſhould be worked into the border every ſpring [b]: Great care,

[b] As it is very important to know what kind of manure is the moſt proper for Vines, and alſo the moſt eligible ſeaſon of applying it, I truſt the following extract will prove highly acceptable and ſatisfactory to my readers:

"My landlord told me, that he had an intimate acquaintance, a Vigneron, at "Verzenay, who was reckoned one of the moſt attentive and careful ma-"nagers

care, however, ſhould be taken not to injure the roots of the Vines; and, therefore, the border ſhould not be worked deeper than two or three inches. This work is beſt performed with a three-pronged fork.

Although

" nagers in all the country, and, if I pleaſed, he would give me a letter to " him, requeſting him to give me all the information I deſired.

" This I readily accepted, and accordingly, when I aroſe in the morning, he " had it ready for me. I proceeded to Verzenay, where I inquired for the " Vigneron the landlord at Chalons had wrote to. I was preſently ſhewn " his vineyard, with his houſe by the ſide of it. He read the letter, and re- " ceived me with a certain air of hoſpitable pleaſure.

" We walked directly into his vineyard, which was dunging, in trenches dug " for that purpoſe. This introduced a converſation on that point, in which " he explained the modes and principles of dunging vineyards.

" The ſeaſon for dunging moſt approved here, is directly after the vintage, and " to be finiſhed before the winter ſets in. It is all carried in on the heads of " women and children in baſkets. It is of conſequence to have a dry ſeaſon " for the work of dunging, otherwiſe it is very badly performed. The " women empty their baſkets in trenches dug for that purpoſe, which are " doing at the ſame time, and others ſpread it in the trenches and cover it " with mould immediately. Theſe trenches vary; ſometimes they are made " along the centre of the intervals, at others they are dug between the plants. " The ſort of dung they preſer moſt is cow-dung, that is, the cleanings of " the cow-houſes, which are well littered with ſtraw or ſtubble for that pur- " poſe: Horſe-dung is alſo uſed, but only on ſtiff ſoils. The cleanings of " ſheep-pens, littered, is much valued, and they think the litter of as much " conſequence as the dung. The peaſants, vine-dreſſers, inhabitants of vil- " lages, and, in ſhort, every body that keeps a ſingle cow, takes care of the " manure, forming it regularly into a heap for ſale, and it is bought by the " proprietors

Although many good grapes may be obtained the third ſummer, and eſpecially from the temporary plants, yet it will be prudent to have a regard to future wood, rather than to the crop.

It

" proprietors of the vineyards at ſo much a baſket. They reckon that from " five to eight hundred baſkets are neceſſary for an acre of Vines. I ſaw the " baſkets, and reckon them to hold about half a buſhel, ſo that eight hundred " baſkets are four hundred buſhels, which I take to be about twelve or thir- " teen common farmers cart-loads; and this manuring is repeated every four " or five years.

" The price per baſket varies according to the ſort of dung and litter, but it " generally comes to five or ſix ſhillings an hundred, delivered in the vine- " yards; but if very good, to ſeven or eight, and ſometimes more has been " given.

" Making dung is ſo much attended to throughout all the wine country, that " every means are uſed to increaſe the quantity.

" All cattle are kept in houſes as much as poſſible, and littered ſtraw is uſed " for this; alſo ſtubble, which is pulled up by hand: Rubbiſh wood from " foreſt land, leaves of trees ſwept up, and fern from waſte tracts; every thing " is applied to litter with the moſt unremitted attention. Much cattle are " kept, eſpecially cows. Theſe are fed by every means that can be taken. " Every weed that is picked up in the vineyards, every blade of graſs that " ariſes, is ſaved with as much care as the grapes, and given to the cows.*

" Dung is, however, ſometimes laid on in March, but it is not reckoned ſo " proper for that work as Autumn. The quantity is the ſame at either ſea- " ſon.

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* *The whole of this paragraph merits particular attention, and is truly worthy the farmer's unremitted imitation.*

It is an injudicious practice to endeavour to get an early crop from young Vines, as in that caſe it will be required to make fires early in the ſpring, which would prove very prejudicial to the Vines, by forcing them out at a ſeaſon when much air cannot be given, for want of which the ſhoots would grow weak and long-jointed.

The latter end of February, or beginning of March, is quite ſoon enough to begin to force. Moderate fires ſhould be made for two or three days befores the glaſſes are put on, as this will dry the wall, and prevent a ſtrong ſteam from ariſing in the houſe. The border ſhould be raked ſmooth; and if a little fine ſand be thinly ſprinkled thereon, it will contribute to the ſun's reflection, to the wholeſomeneſs of the air, and give a neatneſs to the houſe.

Plenty

"ſon. Over dunging they reckon prejudicial to Vines, cauſing them to run "too much to wood, giving the wine a heavineſs, and making it apt to grow "mothery. But this depends on the ſoil; for ſome lands are ſo deficient in "natural fertility, that, unleſs they are dunged more than commonly, they "will not yield a crop: They lay a thouſand baſkets on ſuch, and ſometimes "even ſo far as twelve hundred.

"I objected that this general ſpirit of dunging vineyards muſt rob all the com- "mon huſbandry in the country; that, replied he, is of no conſequence, for "corn will not pay for dung where there are vineyards to demand it. Upon "my doubting this, he ſeemed to lay it down as a maxim that could not be "controverted."

Marſhall's Travels, vol. iv. p. 78.

Plenty of air ſhould be given whenever the weather will permit, and eſpecially for the firſt ten or twelve days. This, with moderate fires, will cauſe the buds to break turgid, bold, and of a good colour. When a Vinery is kept warm and cloſe at this critical ſeaſon, the buds generally break pointed, weak, and of a yellowiſh hue.

Vines that have been expoſed to the weather, generally break at almoſt every eye when forced at this ſeaſon. The caſe is different with thoſe that are kept conſtantly covered, as has been obſerved in treating upon Vines in a Hot-houſe.

Many of the ſuperfluous ſhoots ſhould be rubbed off as ſoon as they appear, as this will contribute to invigorate the remaining ſhoots. And as ſoon as the bunches appear, it will be proper to go over the Vines, and carefully diveſt them of all but the neceſſary ſhoots.

The ſhoots ſhould not be left on the principals nearer together than twelve, fifteen, or eighteen inches; a matter to be determined by the kinds, that is, whether they produce ſmall or large leaves.

Much care and judgment is alſo required in the choice and diſpoſition of theſe firſt-riſing branches, as the beauty and regularity of the Vines depend entirely on a judicious diſpoſition in training their branches at firſt. The ſhoots from the principals

muſt all be trained in a perpendicular direction; and even ſuppoſing them very ſtrong and vigorous, not more than one bunch ſhould be permitted to remain upon each. Theſe ſhoots may run five or ſix feet before they are ſtopped.

The temporary plants will, in general, ſhoot very ſtrong, and ſhew much fruit. Either three or five ſhoots may be left upon thoſe branches that were pruned to fifteen or twenty eyes, that is, a leading ſhoot from the top, and one or two on each ſide. The latter ſhould be ſtopped at the ſecond, third, or fourth joints above the uppermoſt bunch, but the leading ſhoot ſhould be ſuffered to run nearly to the top of the houſe. Only one ſhoot ſhould be left upon thoſe that are pruned down to three or four eyes, and this ſhoot muſt be ſtopped at the third or fourth joint above the bunch.

The ſhoots at the rafters, that were pruned to twenty or twenty-five eyes each, will probably puſh at all of them; but not more than five or ſeven ſhoots ſhould be permitted to remain, even on the ſtrongeſt, viz. a leading ſhoot, and two or three on each ſide. Obſerve, one ſhoot upon each ſhould be left as near to the bottom as can be, as the whole plant will require to be pruned down to this ſhoot the next winter.

Only one ſhoot ſhould be left upon thoſe Vines that were pruned down to three or four eyes, (I ſuppoſe at every other rafter)

rafter) and this muſt be trained up the rafter as in the preceding year.

In ſpring, the weather is frequently very variable; and, therefore, it will be neceſſary that the gardener ſhould pay ſtrict attention to every part of the management of the Vinery himſelf; and particularly to the fires, admiſſion of air, and watering of the border. If theſe be left to the care of labourers, the ſucceſs will be very precarious, ſince it is from an attentive, proper, and judicious apportionment of heat, air, and moiſture, that we muſt look for ſucceſs.

Particular attention will be required when the Vines are in flower[c], as a ſmall neglect, at that critical ſeaſon, would be

 attended

[c] At the time of the Vines flowering in a Vinery, &c. the air is impregnated with effluvia of a very agreeable ſcent. This circumſtance is noted in a paſſage in the *Canticles* ii. 13. very remarkable and expreſſive. The words are, 'The Vines with the tender grape give a good ſmell.'

As even a very few bunches in flower are capable of affording a ſenſible and very pleaſing odour, it ſeems ſomewhat extraordinary that Sir Thomas Brown ſhould have thought differently in his comment on the above text.

« That the flowers of the Vine ſhould be emphatically noted to give a pleaſant « ſmell, ſeems hard unto our Northern noſtrils, which diſcover not ſuch odours, « and ſmell them not in full vineyards; whereas in hot regions, and more ſpread « and digeſted flowers, a ſweet ſavour may be allowed denotable from ſeveral human « expreſſions, and the practice of the ancients, in putting the dried flowers of the « Vines into new wine, to give it a pure and floſculous race or ſpirit, which wine « was therefore called Ὀνάνθινον, allowing unto every *Cadus* two pounds of dried « flowers." *Sir Thomas Brown's Miſcellaneous Tracts*, page 25.

attended with the moſt fatal conſequence. If the weather ſhould become hot and dry, the flowers of many kinds of grapes are liable to fall off: A cold dark ſeaſon alſo will ſometimes produce the ſame bad effect. I may add too, that an extreme degree of fire-heat will prove equally prejudicial.

The air in the houſe ſhould not, at any time, during the flowering ſeaſon, exceed eighty-four or eighty-five degrees of Fahrenheit's Thermometer; and, in a dark cold ſeaſon, ſhould be kept up to ſixty-four or ſixty-five degrees.

The ſurface of the border ſhould be kept in a moiſt ſtate, by being conſtantly ſprinkled with water, for grapes ſet beſt in a cloſe ſultry moiſt heat.

As ſoon as the grapes are grown to the ſize of ſmall ſhot, the bunches of the cloſe-growing kinds ſhould be thinned in the manner already deſcribed.

Pinch off the tendrils and laterals whenever they appear; diveſt the Vines of all ſuperfluous ſhoots that may be produced during the ſummer, that ſo they may have nothing unneceſſary to ſupport. Keep the ſhoots, as they advance, regularly faſtened to the trellis and rafters, and never ſuffer them to grow in a rude and diſorderly manner. Vines managed in a maſterly manner ſhould always be kept in a neat ſtate, and therefore will require almoſt daily attendance.

If

If at any time, during the months of June, July, and Auguſt, the weather prove very hot and ſultry, hardly too much air can be given to the Vines. I have ſometimes taken the glaſſes entirely off the Vines during a violent hot ſeaſon, and have always found the grapes to ſwell exceedingly during ſuch a conſtitution of the air. Beſides, the Vines will be greatly benefited by this mode of treatment, and eſpecially when there are copious dews and refreſhing ſhowers. It will be proper, however, to put on the glaſſes at the time of the ripening of the fruit, as there is no depending on the flavour of the grapes when expoſed to the weather.

It is highly proper to keep the border in a moiſt ſtate during the time of the ſwelling of the fruit; but when the grapes change, and become nearly ripe, water ſhould be given very ſparingly; ſince, if the border were at that time kept too wet, it would debaſe the flavour of the grapes.

As ſoon as the grapes are all cut, take off the glaſs frames, and give the border a very plentiful watering, which may be repeated two or three times in the ſpace of eight or ten days, in caſe of dry weather.—From this time till the pruning ſeaſon, the Vines will require a management ſimilar to that of the preceding ſeaſon.

In pruning the principals this third ſeaſon, only one general rule is to be obſerved, which is, to prune all the ſhoots produced

produced from the horizontals down to three or four eyes each. See plate iii. fig. 3.

The ſhoots of the temporary plants muſt be pruned according to their ſtrength and vigour; obſerving, however, to prune the lower ſhoots of each plant down to three or four eyes, in order to furniſh a ſucceſſion of bottom-wood. But the ſtrong leading ſhoots may, nevertheleſs, be left to a pretty good length, viz. from eight or ten to ſixteen or eighteen eyes, according to their ſtrength; by this means the upper part of the wall will ſoon become completely furniſhed.

Thoſe Vines at the rafters, that have born a crop, muſt all be pruned down to the lowermoſt ſummer ſhoot on each, which ſhoot ſhould be ſhortened to four or five eyes; and the Vines between the bearers (i. e. at every other rafter) ſhould be cut down to twenty or twenty-five eyes, or, in general, to about two-thirds of the length of the rafters.

In the following, and all ſucceeding ſeaſons, the Vines will require a management ſimilar to that of the preceding one; therefore a repetition will be unneceſſary.

As the Vines advance in age, they will certainly be enabled to produce every year, for a certain period, a larger crop of fruit: It is to be obſerved, however, that this muſt always be proportioned to the ſtrength and vigour of the Vines.

By

By this mode of treating Vines, a large crop of fruit may be obtained every ſeaſon. The Vinery at Welbeck has produced conſtant and large crops of grapes for the laſt twenty years, and the Vines at this time are exceedingly healthy and vigorous. The ſtrength and vigour of Vines may be retained even for ages, where the forcing is carried on in a mild and moderate degree, juſt to aſſiſt nature and our ſeaſons, ſo as to endeavour to bring the temperature of a Vinery as near as may be to the climate in which Vines ſucceed beſt in the natural way. Gentle and moderate forcing will always be found to anſwer this end beſt, and at the ſame time be attended with the leaſt expence.

The principal thing now to be conſidered is, the method of pruning and training the Vines, and particularly the principals, till the wall gets fully covered in every part.

Training and pruning of the principals, the next or fourth ſeaſon, muſt be the ſame as directed for Vines at the back wall in the Hot-houſe. See page 92, viz. only one ſhoot trained from each ſpur, which ſhoots muſt be pruned to a long one and a ſhort one alternately, as is there directed. See plate iii. fig. 4.

From every long ſhoot, i. e. thoſe pruned to about four feet, five ſhoots ſhould be trained the next or ſucceeding ſeaſon, viz. two ſhoots on each ſide, and one leading ſhoot at top.

At

At the next or fifth winter's pruning, obſerve to cut the four ſide ſhoots down to two or three eyes each, and the top ſhoot to ſix or ſeven eyes, or, in general, to about one and a half feet. See plate iii. fig. 5.

The ſhoots between the uprights muſt conſtantly be pruned down to two or three eyes each, in order to keep up a competent ſucceſſion of the bottom-wood.

In the following or ſixth ſeaſon, the training and pruning muſt be nearly the ſame as in the preceding, with this only difference, that the uprights having advanced one and a half feet, every upright will admit of two ſide ſhoots more than in the former year, viz. three on each ſide. See plate iii. fig. 6.

When the Vines are arrived at this ſtage, the wall will, in the next ſummer, be completely covered by the principals only; and, therefore, the temporary plants ſhould, by degrees, be previouſly cut away to make room for them.

Here I wiſh not to be underſtood, as affirming that the principals will always arrive at this ſtate, (viz. the ſixth ſtage) at the ſixth ſeaſon after planting.—Vines are liable to impediments and obſtructions from various cauſes; and ſo long as they make weak ſhoots in the ſummer, they muſt invariably be cut ſhort down to two or three eyes at the next winter's pruning,

pruning, without having regard to any of the ſtages, as has been ſet forth.

The future management of Vines, thus completely and regularly trained, will not be very difficult.

It is natural for Vines to produce ſhoots plentifully from the old wood; therefore when any of the ſide ſhoots of the uprights, or the bottom ſhoots between them, by their annual progreſs, riſe too much from the old wood, they ſhould be cut out at the next winter's pruning; and it will be further neceſſary to make a reſerve of ſome new ſhoots to ſupply their places.

Alſo, when leading ſhoots of the uprights advance beyond due bounds, it will be expedient to cut all ſuch ſhoots entirely away, down to the next ſide ſhoots below, which ſhoots ſhould be trained upwards to form new leaders.

By this method of practice, a Vine-wall may be conſtantly kept in a regular and elegant form, without ever varying much above or below the true and proper ſtandard.

In regard to the future management of the Vines at the rafters, it ſhould be obſerved, that though it will not be abſolutely neceſſary to adhere invariably to the rule laid down of annually cutting every other Vine down to the bottom of the

rafters, yet it will be proper to keep theſe Vines from extending too far over the glaſs frames, and thereby ſhading the houſe, which would tend to injure the Vines againſt the back wall. The method, therefore, of conſtantly cutting down ſome of them, and the training of one ſhoot from each, as has been already directed, will, of all others, be found to be the moſt eligible and ſucceſsful practice.

It only remains for me to mention the early crops of choice fruits and Vegetables, which may be obtained from the Vine-border. It is uſual, in works of this ſort, for Gentlemen to promiſe much to themſelves, by planting the border with ſtandards, half ſtandards, and dwarf-trees of various kinds of choice fruits, ſuch as peaches, cherries, &c. together with crops of ſtrawberries, peaſe, lettuce, &c. in abundance under them.

I confeſs the idea of this luxuriant profuſion affords the mind a ſatisfaction truly pleaſing. But thoſe, who purſue ſuch modes of practice, would do well to fortify their minds againſt future diſappointments.

It ſhould be conſidered, that the ſucceſs of the Vines trained againſt the flued wall, is the firſt and principal object. A few good grapes may be got from the Vines at the rafters, and without doing any material injury, provided the Vines are judiciouſly managed; but if the Vines at the rafters are permitted

to

to extend themſelves too far over the glaſs-frames, or if the border ſhould be cloſe planted with tall-growing fruit-trees, the Vines at the wall will, by this means, be deprived both of ſun and light, and will be thereby ſoon reduced to an undeſirable ſtate of imperfection: Beſides, by ſuch imprudencies, the border too will ſoon be impoveriſhed, ſo that diſappointments will attend every future proſpect.

It is certain, that the leſs the border is cropped with vegetables, &c. the better; and yet a few articles may be procured in the ſpring, without much damage to the Vines. And in this caſe I would recommend, that the border ſhould be furniſhed with plants growing in pots, ſuch as ſtrawberries, roſe-trees, carnations, and various other ſorts of choice flowers; nay, I ſhould not much object to peach, fig-trees, &c. trained in pots. But even theſe ſhould not be introduced in too great quantities, which would give the houſe an appearance of being crowded. To conclude this ſhort buſineſs, by allowing a proper ſpace to every plant, and by a ſtrict obſervance of the foregoing rules, every thing will thrive; and the general reſult will be both ſatisfactory and advantageous.

FURTHER OBSERVATIONS

ON THE

CULTURE

OF THE

VINE, ON VINERIES, VINE-FRAMES, &c.

IT has been already obſerved, that there are various modes of conſtructing buildings for the purpoſe of improving the culture of Vines.

Vineries, or Grape-houſes, are ſometimes built on commodious plans, of which the moſt elegant certainly are thoſe which have an entire glaſs-framed roof, with one ſide deſcending to the Eaſt, the other to the Weſt: The South end muſt conſequently be glazed. As buildings of this conſtruction are ſpacious, and will admit air to be given on every ſide, they are equally proper for forcing many kinds of fruits, as peaches, cherries, figs, &c. In ſuch houſes, however, the Vines ſhould be trained to the rafters only, and the other fruits, as ſtandards, dwarfs, &c. permitted to occupy the ſpace below. But as theſe buildings admit the meridian ſun only at the end of the houſe, they are very improper for producing grapes at an early ſeaſon.

Another

Another kind of Grape-houſe is conſtructed on a plan ſimilar to that of a ſingle-pitted Pine-ſtove. In this, the flued wall ſhould be about fourteen feet high; the roof ſhould be ſlanting, and ſhould cover an extent of about ſixteen feet; and a flue ſhould alſo run from the Eaſtern to the Weſtern extremity, near the front wall of the houſe. Theſe buildings are not only well calculated for grapes, but alſo for early crops of melons, ſtrawberries, &c.

As glaſs is the principal article of expence in erecting proper buildings for forcing, glaſs-frames ſhould be adapted, as much as poſſible, to anſwer different ends and purpoſes.

Where there are peach-houſes, the glaſs-frames may be made uſeful in a double capacity, by having a building for Vines conſtructed of the ſame dimenſions as thoſe of the peach-houſe. For as peaches do not require to be covered with glaſs later than the middle of ſummer, a crop of grapes may be got by means of the ſame glaſſes after that ſeaſon.

Melon-frames may alſo be applied to a double purpoſe; good crops of grapes may be obtained from Vines trained againſt dwarf walls, that is, walls about ſix feet high. Here a ſmall ſlanting roof ſhould be made of proper dimenſions for the melon-frame glaſſes. In both the laſt-mentioned caſes, a ſmall degree of fire heat would be of ſingular advantage, and might be applied either by a flued wall, the flue running through the houſe,

houſe, or by caſt-iron pipes, which are frequently uſed with ſucceſs for this purpoſe.

I have already mentioned, that in Holland it is cuſtomary to begin forcing Vines as early as in the month of November.

The frames made uſe of for this winter-forcing are generally about twenty-five or thirty feet long, about five feet wide at bottom, and at the top about three feet. The height generally about ten feet, (the height of the Vine-wall to which the frame is affixed) ſo that the glaſs-frames ſtand nearly in a perpendicular direction. The fire-place is at one end, the flue runs along the bottom to the oppoſite end, and generally returns to a chimney built in the middle of the frame.

The Vines are brought from the wall, and nailed all along the front, cloſe to the glaſs-frames, and are ſecurely covered at nights: By this diſpoſition of the branches, it is eaſy to conceive that there muſt be difficulty in moving along on the inſide.

I have ſeen grapes in theſe frames in pretty good perfection in the month of April, and was informed that they are frequently ripe in the beginning of March. The bunches, however, are not very plentiful in theſe early crops. The black and white Sweetwater are the kinds preferred for this early forcing.

As

As this kind of forcing in a manner ſpoils the Vines, it is neceſſary to have the Vine-walls at leaſt five times the length of the frame, in order to furniſh a ſucceſſion of well-perfected wood.

After the crop is over, the Vines, in the courſe of the enſuing winter, muſt be cut down nearly to the bottom, and they require a term of four or five years to recover themſelves for another early crop.

The frame deſcribed would certainly admit of improvement, and flued walls would alſo be of further advantage, by co-operating with the flue on the inſide of the frame. But ſtill, this mode of forcing is by no means to be recommended in this country. On the continent, the ſky is, for the moſt part, clear. There is almoſt daily ſunſhine, and the weather is regular and ſettled during the winter ſeaſon. There nothing is required but attention to guard againſt the ſeverity of the froſts; but in a climate ſo ſubject to variation as ours, the ſame method of forcing can never be approved, becauſe no means have yet been diſcovered, to counteract the ſad effects of the frequent cloudy dull days which we experience, and in which a ſtrong fire-heat, ſuch as would neceſſarily deſtroy all our future hopes, muſt be applied. In ſhort, vegetation cannot be carried on to any good purpoſe without the aid of the ſun's heat; and, therefore, though in forcing, it be eaſy to guard againſt the ſeverity of the nights, yet there is no ſecurity againſt long-con-

tinued

tinued dull days, but by a ſtrong fire-heat, which, at ſuch a ſeaſon, would undo all.

The method of forcing Vines planted in the open ground, as has already been hinted, will, in this country, be far more adviſable than the foregoing practice, and is more particularly ſuitable to thoſe perſons who are not poſſeſſed of any of the larger buildings above deſcribed.

For this purpoſe the Vines ſhould be planted about three feet apart, and trained in an horizontal poſition about eighteen inches or two feet from the ground. Large melon-frames may in this caſe be uſed to produce a late crop of grapes, after the melon ſeaſon is over.

The bottom of the frame ſhould be covered over with ſlate or tiles, to prevent the damp of the ground from riſing, and to reflect the ſun's rays, to the great furtherance of the grapes.

A lining of hot horſe-dung, kept conſtantly round the outſide of the frame, will alſo tend greatly to accelerate the ripening of the fruit.

The early kinds of grapes are the moſt proper for this method of forcing.

In countries where coal abounds, the Vines are ſometimes forced by flued walls without any covering, but I have ſeldom

ſeen

ſeen good crops of grapes perfected this way; the berries on the bunches do not ripen equally: From the conſtant heat and reflection of the wall, the berries on the ſide of the bunch next it will be ripe long before thoſe in front, which will render the bunch unſightly, and hardly fit for the table at any ſeaſon. Beſides, both wall and border being at all times expoſed to the weather, the fruit will become inſipid in a long wet ſeaſon. It is further to be obſerved, that the berries of many ſorts of grapes are very ſubject to crack in wet weather, after which they generally either ſoon decay, or become a prey to waſps and flies.

In ſome ſeaſons there are many kinds of grapes which will ripen well againſt common walls, and particularly in the Southern counties of this kingdom. But Vines againſt walls, without any covering, are liable to ſeveral misfortunes. The reflection of the wall conſtantly brings out the young ſhoots at an early period in the ſpring: They are frequently injured, and ſometimes totally deſtroyed, by ſharp froſty nights, not unuſual in the beginning of May, and which ſometimes happen even at the latter end of that month.

A cold ſummer retards the ripening of grapes expoſed to the weather, and a wet autumn renders them inſiped and of little value.

In order to ſave expence, oiled paper is ſometimes uſed inſtead of glaſs; but Vines do not ſucceed well under ſuch a

covering, nor are the grapes ſo high flavoured as when under glaſs. By the faintneſs of the beams of light which ſuch a covering affords, the Vines will grow weak and long-jointed, and eſpecially in a dull moiſt ſeaſon, when much air cannot be admitted.

When oiled paper covers are uſed, they ſhould not be applied till the Vines begin to puſh in the natural way, and even then ſhould be uſed at firſt only to defend the Vines from the cold of the nights, for it will be neceſſary they ſhould have free air in the day-time, to prevent their drawing weak.

The great damage done by oiled paper covers is, from the too cloſe covering at the beginning of the ſeaſon; but when the Vines come into flower, they are not ſo liable to receive hurt by cloſe covering, becauſe the wood cannot draw weak after the leaves are grown to their natural ſize. The ripening of the grapes may be greatly accelerated by covering after this period, and more eſpecially with the aſſiſtance of a little fire-heat, which may be applied as has been already directed, p. 125.

FURTHER

FURTHER OBSERVATIONS

ON

PRUNING.

THE ſucceſs of Vines depends ſo much on judicious pruning, that one can hardly be too explicit in giving directions upon this head.

Vines trained in the regular manner already directed, are much eaſier kept in proper order, than thoſe trained in the uſual way. But notwithſtanding the full directions before given, I am inclined to drop ſome further hints on the ſubject, which I flatter myſelf will be found of uſe.

A common error in pruning Vines, and indeed with moſt kinds of fruit-trees when trained againſt walls, is the leaving too much wood. It is no uncommon thing to ſee the leaves on Vine-walls ſo much crouded, as almoſt totally to exclude the ſun: Vines trained up to the rafters in Hot-houſes, &c. are frequently in the ſame predicament. But when Vines are in health and vigour, the bearing wood, which is, in general, the ſhoots of the former year's produce, ſhould not be crouded. The ſhoots require a ſpace from ten, or twelve, inches, to two

feet and a half. This, however, depends in a great meaſure on the kind of Vine, that is, whether it produces large or ſmall leaves. Now, in order to form a better judgment in this matter, I ſhall here ſubjoin a liſt of the dimenſions of the leaves of various kinds, as taken at different periods, from Vines growing in Welbeck garden.

LIST of VINES, ſhewing the Size of the Leaves, and the Length of the Foot-Stalks of various Species, taken at WELBECK.

	Diameter of the Leaf. *Inches.*		*Length of the Foot-ſtalk.* *Inches.*
1. White Muſcat of Alexandria	12	—	$8\frac{1}{2}$
2. Red Grape from Syracuſe	11	—	6
3. Le Cœur Grape, or Morocco Grape	$9\frac{1}{2}$	—	$5\frac{1}{2}$
4. Aleppo Grape	$12\frac{1}{2}$	—	6
5. Black Damaſcus	11	—	$5\frac{1}{2}$
6. Black Grape from Tripoli	11	—	5
7. Golden Galician	$10\frac{1}{2}$	—	5
8. Black Muſcadel	11	—	6
9. Red Muſcadel	$10\frac{1}{2}$	—	6
10. White Grape from Alcobaca	11	—	$5\frac{1}{2}$
11. White Frontinac	11	—	7
12. Grizzly Frontinac	11	—	$6\frac{1}{2}$
13. Black Frontinac	12	—	$6\frac{1}{2}$
14. Blue Frontinac	$6\frac{1}{2}$	—	4
15. Red Frontinac	10	—	6
16. White Sweetwater	9	—	4
17. Black Sweetwater	8	—	$3\frac{1}{2}$
18. Black Hamburgh	$13\frac{1}{2}$	—	7
19. Red Hamburgh	11	—	6
20. White Hamburgh	12	—	$6\frac{1}{2}$

21. Malvoiſe

	Diameter of the Leaf. Inches.		*Length of the Foot-ſtalk.* Inches.
21. Malvoiſe	9	—	5
22. Genuine Tokay	11	—	6
23. Lombardy	11½	—	7
24. Smyrna Grape	10	—	6
25. Brick Grape	6	—	4
26. Black Spaniſh, or Alicant	10½	—	5
27. White Muſcadine, or Chaſſelas	11	—	5½
28. Black Muſcadine	9	—	5
29. Royal Muſcadine, or D'arboyce	12½	—	7
30. Malmſey Muſcadine	12	—	6½
31. Claret Grape	6	—	4½
32. Syrian Grape	17½	—	6
33. Miller's Burgundy	5½	—	3½
34. Small Black Cluſter	5	—	3
35. Large Black Cluſter	6	—	4
36. White Morillon	9	—	5
37. Early Black July Grape	6	—	4
38. Cat's Grape	5½	—	3½
39. Black Raiſin Grape	10	—	6
40. White Raiſin Grape	11	—	6
41. Damſon Grape	10	—	5½
42. Early White Grape from Tenerif	9	—	5½
43. St. Peter's Grape	10	—	7
44. Black Grape from Paleſtine	10	—	6
45. White Parſley-leaved Grape, or Ciotat	7½	—	4
46. Black Liſbon	11½	—	6
47. Greek Grape	6½	—	3
48. White Corinth Grape	5½	—	4
49. White Muſcat (from Lùnel)	12	—	8
50. Cornichon	9½	—	5
51. Orleans	8	—	4½

52. Tranſparent.

	Diameter of the Leaf. *Inches.*		*Length of the Foot-ſtalk.* *Inches.*
52. Tranſparent	8	——	4
53. Pearl Muſcadine	10	——	5½
54. Amber Muſcadine	10½	——	5
55. Sheep's Tail (from Portugal)	10	——	5
56. Humorous (ditto)	11	——	5½
57. Deagalues (ditto)	10	——	5
58. Cracking Grape (ditto)	9	——	4½
59. Small Yellow Grape (ditto)	7	——	4
60. White Conſtantia (from the Cape)	12	——	7
61. Small White Grape (from Naples)	6	——	5
62. Black Switzerland	11	——	6
63. Maiden Grape	7	——	3½
64. King's brown Grape	8	——	4½
65. Paſſe Muſque	12	——	7
66. Jefferies Muſcat	12	——	6
67. Champaign	10½	——	5
68. Large Purple Grape (from Portugal)	11	——	6
69. Peruvian Eye (ditto)	12	——	6
70. De do de Dama, or Ladies' finger (ditto)	11	——	5½

N. B. The above dimenſions were taken, upon an average, from leaves of each ſpecies at a *medium* ſize.

In pruning, the uſual method is, to allow the ſhoots a certain ſpace, indiſcriminately, to every kind of Vine; but ſurely nothing can be more erroneous.

In regard to diſtance, it will be eaſy to obſerve the foregoing rules; but the conſideration of the required length of the ſhoots is a matter of more difficult determination.

When

When Vines are in a weak ſtate, they will always require to be ſhort pruned, that is, the ſhoots in general ſhould be pruned to two, three, or four eyes each.

And when Vines are only moderately vigorous, the ſhoots ſhould be left about a ſpan long. This, however, muſt be underſtood only of ſpreading Vines, that cover a good extent of walling, for Vines, trained in one ſhoot up the rafters, in a Hot-houſe, require a different treatment.

When Vines are in extreme vigour, they always produce the beſt grapes from ſhoots that are left a great length.

The height of a Vinery will ſeldom admit of ſhoots, be they ever ſo ſtrong, being left longer than ſix or ſeven feet; but when vigorous Vines are trained in one ſhoot up the rafters, in a Hot-houſe, they may conſtantly be pruned to the length of eighteen, twenty, or twenty-two feet.—A perſon unaccuſtomed to this practice would, from hence, be inclined to deem this mode abſurd, and would naturally conclude, that the Vines muſt be rendered weak by it. It is not, however, from the length of the ſhoot, but from ſuffering by the next year's crop, that ſuch danger is to be apprehended.

The extreme parts of theſe long and vigorous ſhoots always produce both bunches and berries of a remarkable ſize. The uncommon large bunches, that have been produced in Welbeck gardens,

gardens, have conſtantly come from the uppermoſt eye of ſhoots of the above deſcription.

I have already obſerved, that the ſpurs, produced from principal ſhoots, ſhould invariably be pruned down to two, three, or four eyes, as occaſion may require. And that when theſe extend too far from the principal ſhoots, which they will do in time by their annual progreſs, it will be proper to cut them entirely away: But previous to this, it will always be neceſſary to make a reſerve of freſh ſhoots to ſupply their places.

When ſtrong old wood, that is, ſhoots of four or five years growth, are to be cut away from any part of a Vine, the operation ſhould be performed with a ſharp knife, and the ſhoot ſhould be cut off cloſe to the bottom, that, when the part ſkins over, it may become ſmooth, and not left to grow ragged, as is but too generally practiſed.

By the common methods of pruning Vines, the bole and large branches generally grow rough, ragged, and unſightly; and when Vines have long been under an injudicious management of this ſort, it is hardly poſſible to reclaim them. But by due care, and diſcreet management afterwards, it will not be difficult to keep the bole and large branches of Vines ſmooth, and of an agreeable appearance.—I conſtantly peel off as much of the bark as can be gotten without injuring the Vines, and then waſh the branches with ſtrong ſoap ſuds; to be applied with a

ſoft

ſoft bruſh, ſuch as is uſed for common painting: The time of winter pruning is the moſt eligible ſeaſon to perform this operation, as then the Vines will not be in danger of bleeding. The ſoap ſuds are not only uſeful for giving the Vines a ſmooth and gloſſy appearance, but are alſo efficacious in deſtroying ſeveral ſpecies of inſects that lodge upon them during the winter.

When Vines, through neglect or miſmanagement, are reduced and become weak, nothing better than a few ſmall bunches can be expected from them. The beſt method to recover them, when in ſuch a ſituation, is, by cutting them down, at the winter pruning, to the lowermoſt laſt year's ſhoot upon each Vine. The next ſummer's ſhoots ſhould be diveſted of all the bunches as ſoon as they appear, and the ſhoots ſhould be allowed ſufficient ſpace, viz. from twelve or fourteen inches to two feet and a half, according to the kind of Vine, that is, whether it produces ſmall or large leaves. When the ſhoots are properly diſpoſed, the leaves of one ſhoot ſhould not be ſuffered to interfere with thoſe of the next adjoining ſhoot. Thus, by affording a free admiſſion of ſun and air, the new wood will be greatly benefited.

Vines are often permitted to run into a rude and diſorderly ſtate during their progreſs in the ſummer. And it is alſo too prevalent a practice to fix upon certain periods for pruning, or dreſſing them as it is termed. But Vines, properly managed, require attendance almoſt daily, and particularly in the begin-

ning of ſummer. All the ſupernumerary ſhoots ſhould be rubbed off as ſoon as they begin to ſhoot in the ſpring, and thoſe only ſhould be retained, which will be required either for fruit or ſucceſſion of wood.

The Vines will be greatly benefited by being thus diſburthened of all their unneceſſary ſhoots, which only tend to embarraſs them in the regular diſpoſition of the new wood.

In the ſummer pruning of Vines, the uſe of the knife ſhould be avoided as much as poſſible; it is far more eligible to pinch off the ſhoots with the finger and the thumb. The acidity of the juices, which abound in the young ſhoots of Vines, cauſe an immediate tarniſh to enſue and appear on the blade of the knife; and this, if not poiſonous, proves very injurious by incorporating with the juices in the wounded part[c].

As all the different kinds of Vines are not diſtinguiſhable by the wood at the time of the winter pruning, a perſon, unacquainted with the kinds, might eaſily be led into an error, reſpecting the proper ſpace which ought to be allowed for the ſhoots. If the wood ſhould appear crouded, when the leaves are

[c] The ancients were well aware of this circumſtance. Virgil, in giving directions for ſummer pruning of Vines, expreſsly ſays,

"Nor exerciſe thy rage on new-born life,
"But let thy hand ſupply the pruning knife;
"And crop luxuriant ſtragglers."

are full grown, it will be proper to let it remain in that ſtate during the ſeaſon of the Vine's bleeding. But the ſuperfluous wood may ſafely be taken from any part, at the time of the Vine's flowering, as they do not bleed at that ſeaſon.

I have already obſerved, that the beſt ſeaſon for pruning Vines is at the time of the leaves falling; becauſe when the pruning is deferred till the ſpring, the Vines are liable to bleed on the riſing of the ſap, and eſpecially at large inciſions, where ſtrong wood has been cut away; but when Vines are pruned in the autumn, there will be time during the winter for the wounded parts to heal, and for the pores to cloſe, before the riſing of the ſap in the ſpring. As Vines are ſometimes greatly injured by their bleeding, it may not be deemed improper here to ſay a few words on that ſubject.

Vines, pruned even in the winter months, will ſometimes bleed a little, on the riſing of the ſap in the ſpring; but if a Vine gets wounded at that ſeaſon, it will, like the birch, bleed copiouſly from the wounded part. "It is aſtoniſhing," ſays Mr. Evelyn, "that ſome trees ſhould, in a few hours, weep more than they will weigh."

The diſcharge from the wounded part is, in a great meaſure, regulated by the ſtate of the atmoſphere[d].

[d] "In order that we may have a diſtinct view of the motion of the ſap, it will "be neceſſary to reflect, that the root, ſtem, branches, and leaves are conſtructed

It is eaſy to ſtop a gentle ouzing from an old wound of a Vine, by applying ſoft clay, putty, or warm wax to the wounded part: I have, however, ſometimes found, that ſoot, or

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" ſtructed in the ſame manner. Sallows, willows, Vines, and moſt ſhrubs " will grow in an inverted ſtate, with their tops downward in the earth. " Dr. Bradley deſcribes the manner of inverting a young cherry-tree, the " roots of which will put forth leaves, and the branches become roots. Hence " it is obvious, that the nutritive matter may be conveyed as well by the leaves " as the roots, their vaſcular ſtructure being the very ſame.

" During the heat of a ſummer's day, all plants perſpire freely from the pores of " their leaves and bark. At that time the juices are highly rarefied; and the " diameters of the Tracheæ, or air-veſſels, are enlarged ſo as to preſs upon " and ſtraiten the veſſels that carry the ſap. In conſequence of which, their " juices, not being able to eſcape by the roots, are preſſed upward, where " there is the leaſt reſiſtance, and perſpire off the excrementitious parts by the " leaves and top-branches in the form of vapour. When the ſolar heat de- " clines, the Tracheæ are contracted. The ſap-veſſels are enlarged, and the " ſap ſinks down in the manner of the ſpirits in a thermometer. In conſe- " quence of this change, the capillary veſſels of the leaves and top-branches " become empty. Being ſurrounded with the humid vapours of the evening, " they fill themſelves from the known laws of attraction, and ſend down the " new-acquired juices to be mixed with thoſe that are more elaborated.

" As ſoon as the ſun has altered the temperature of the air, the Tracheæ be- " come again diſtended, and the ſap-veſſels are ſtraitened. The ſame cauſe " always produces the ſame effect; and this alternate aſcent and deſcent, " through the ſame ſyſtem of veſſels, continues as long as the plant ſurvives.

" The irregular motion of the ſtem and branches is another cauſe that contri- " butes to the aſcent of the ſap. Every time that theſe parts are acted upon " by the air, they are made to aſſume a variety of angles, whereby the ſap- " veſſels

or charcoal duſt ground very fine, and mixed with ſoft ſoap to the conſiſtence of paſte, has proved more efficacious.

It

" veſſels are ſuddenly ſtraitened. The contained juices conſequently receive " reiterated impulſes, ſimilar to what happens to the blood of animals from " the contraction of the heart. This obſervation may aſſiſt us in inveſtigating " the vegetable œconomy, ſo far as it regards the management of fruit-trees, " and, probably, may be extended throughout the whole ſyſtem of gardening, " planting, and farming.

" It may be objected, that trees fixed to the wall do, notwithſtanding, carry " their ſap to the extreme branches; but it ſhould be conſidered, that the " warmth of their ſituation, aſſiſted by the horizontal direction of their " branches, is fully ſufficient to propel the ſap, without the undulatory motion " that I have mentioned.

" I beg leave to obſerve, that theſe obſervations are only intended to convey " a general idea of the motion of the ſap. It varies according to the tempera- " ture of the weather. The air is ſeldom one moment alike. The ſap muſt, " therefore, ſometimes move quick and ſometimes ſlow. It may riſe and " fall many times in a day. Sudden heats puſh it upward, ſudden colds make " it fall. Thus the juices are blended, and the ſecretions forwarded.

" The manner that the nutritive juices of the earth and atmoſphere are conveyed " into the ſap-veſſels, remains to be deſcribed. And this makes a neceſſary " part of our preſent argument, as it may aſſiſt us in finding out and ex- " plaining the diſeaſes of plants from the variations of the weather.

" The outer bark, which covers every external part of a vegetable, as well be- " low as above the ſurface, is full of perſpiratory, or abſorbent holes. The " veſſels of this bark, being endowed with the power inherent in capillary " tubes, draw up the moiſture that is applied to their ſurface. From them " it is committed to the veſſels of the inner bark. After receiving ſome de-

It is exceedingly difficult, however, to ſtop the bleeding of a recent wound, and eſpecially when the diſcharge is very rapid; as in ſuch a caſe, I have ſometimes found all the above methods

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" gree of melioration, the ſap is delivered to the blea. From the blea it paſſes, " by anaſtomoſing canals, to the vaſcular ſeries. From thence to the wood, " or fleſh, where it receives its laſt concoction.

" The nutritive particles, being ſeparated by the mechaniſm of theſe numerous " canals, are applied towards the fructification and increaſe of the plant, while " the watery and excrementitious parts are carried expeditiouſly to the leaves, " where they are perſpired off in the form of vapour. It is evident, however, " that, as water contains but few particles that are fit for nouriſhment, it was " neceſſary that plants ſhould have the power of imbibing a large portion of " that fluid. For which reaſon, the ſun-flower, conſidered bulk for bulk, " takes in ſeventeen times more nouriſhment than a man, and, conſequently, " perſpires more.

" During the continuance of dry North-Eaſt winds, the leaves of corn are ob- " ſerved to grow yellow, and the early-ſet fruit frequently falls off. This is " owing to the want of moiſture in the atmoſphere to fill the veſſels of the " leaves and top-branches, whereby the fruit is deprived of nouriſhment. Un- " der ſuch circumſtances, it is probable that wall-fruit may be preſerved by " prudently watering the leaves and top-branches during the heat of the day. " It is, however, a ſingular happineſs, that the air is at no time perfectly free " from moiſture. Bring a bottle of cold water into the warmeſt room, and " its ſurface will immediately be covered with a thick dew. An air abſolutely " dry, would, in a few days, annihilate the vegetable creation.

" The air is juſtly ſaid to contain the life of vegetables as well as animals. It " is a compreſſible and elaſtic fluid, ſurrounding the face of the globe, and " reaching to a conſiderable height above it. Vegetables do not grow in " vacuo,

methods to prove ineffectual: Nor will the application of either pitch, bees wax, or ſealing wax, (at the ſame time ſearing the wounded part with a hot iron) anſwer the intended purpoſe.

When

" vacuo, and animals die when deprived of air. It has two ſtates, being " either elaſtic or fixed. Dr. Hales obſerves, that, in its elaſtic and active " ſtate, it conduces to the invigorating the juices of vegetables; and, in its " fixed and inert ſtate, gives union, weight, and firmneſs to all natural " bodies. By his experiments we are informed, that fixed air conſtitutes " near one third part of the ſolid contents of the heart of oak. It is found to " bear the ſame proportion in peaſe, beans, and other vegetable ſubſtances. " Heat and fermentation render it elaſtic. It is again capable of being ab- " ſorbed and fixed. Was the whole air of the univerſe brought at once into " an elaſtic and repulſive ſtate, every thing would ſuffer a ſudden diſſolution. " Was it entirely fixed, then all things would be reduced to an inert lump. " Almighty providence has provided againſt theſe extremes, and in the moſt " wonderful manner preſerves the balance. Air is to be found in every por- " tion of earth; and as it always contains a ſolution of the volatile parts of " animal and vegetable ſubſtances, we ſhould be careful to keep our ſtiff ſoils " as open as poſſible to its influence. It paſſes, both in its active and fixed " ſtate, into the abſorbent veſſels of the root, and mixing with the juices of " the plant, circulates through every part. Dr. Hales, in his Statical Experi- " ments upon the Vine, diſcovered it aſcending with the ſap in the bleeding " ſeaſon.

" Having demonſtrated, that the motion of the ſap depends upon the influence " of the air, and the power of abſorption common to all capillary tubes, it na- " turally follows that it cannot remain one moment at reſt. The gradations " from heat to cold and *vice verſa*, are infinite, and ſometimes deſultory. So " muſt the motion of the ſap. From the combinations of the nutritive " particles,

When a Vine bleeds rapidly, the moſt effectual expedient I have hitherto been able to deviſe to ſtop its progreſs is, Firſt, to peel off, or diveſt that part of the branch adjoining the wound, of all the outſide bark; then with a ſpunge to dry up the moiſture, and immediately to wrap round the wounded part a piece of an ox's bladder, ſpread over with tar, or pitch, made

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" particles, a number of different fluids are prepared in the ſame plant. Matter " is the ſame in all; but the modification of it makes things ſweet or ſour, " acrid or mild.

" The univerſal juice of a plant is a limpid ſubacid liquor, which flows plenti- " fully from a wound made in a tree when the ſap is riſing. The Birch and " the Vine yield it in great abundance. This liquor, as it moves through " the innumerable ſmall veſſels, becomes more and more concocted, and is " the general maſs from which all the juices are derived. It may be called " the blood of the plant. By a certain modification it produces high-flavoured " oils, gums, honey, wax, turpentine, and even the conſtituent parts of " the plant itſelf. How this tranſmutation is performed, remains, and " perhaps ever will remain, unknown.

" I hope it will not be objected to me, that in this eſſay I have been too " minute. In the hiſtory of nature we cannot be too particular. Every " part of it demands our moſt ſerious attention, and every part of it repays " us for the labour we beſtow. The wings of the butterfly are painted by " the ſame Almighty hand that made the ſun. The meaneſt vegetable, " and the moſt finiſhed animal, are equally the care of providence. We " conſtantly view the wiſdom of God in his works; and yet, as the wiſe " man obſerves, " hardly do we gueſs aright at the things that are upon the " earth, and with labour do we find the things that are before us."

Georgical Eſſays, by A. Hunter, M. D. page 79.

made warm in the manner of a plaſter. The whole muſt be ſecurely tied with a ſtrong thread, well rubbed with bees wax.

The bandage and bladder ſhould be permitted to remain upon the branch for the ſpace of three weeks, or a month, after the operation is performed.

GENERAL OBSERVATIONS

ON

WATERING THE VINE.

ALTHOUGH it is neceſſary that the ſituation of the Vine ſhould be perfectly dry, and more eſpecially in a cold climate where the winters are frequently very ſevere, yet Vines require a plentiful ſupply of water during ſummer, particularly in a hot dry ſeaſon, and at the time of the ſwelling of the grapes.

In hot countries, the Vine is ſaid to grow the moſt luxuriant in a ſituation which is near the water[e]; but it is generally allowed,

[e] The Patriarchs and Prophets frequently repreſent, in Scripture, the flouriſhing ſtate of a nation, a tribe, or family, under the emblem of a Vine growing near water.

"It was planted in a good ſoil by great waters, that it might bring forth branches, and that it might bear fruit, that it might be a goodly Vine." *Ezekiel* xvii. 8.

"Thy mother is like a Vine in thy blood, planted by the waters: She was fruitful and full of branches, by reaſon of many waters." *Ezekiel* xix. 10.

"Joſeph is a fruitful bough, even a fruitful bough by a well; whoſe branches run over the wall." *Gen.* xlix. 22. The Vine indeed is not expreſsly named here, but

allowed, that the flavour of the grapes, from Vines in ſuch a ſituation, is much inferior to that of grapes growing in a dry ſoil.

I have already obſerved, in my directions for the preparation of the Vine-border, the abſolute neceſſity of having drains at the bottom, to take off the ſuperfluous water: By this means the border may be kept in a dry ſtate during winter; and, in ſummer, water may be given as the ſeaſon and other circumſtances may require.

In ſpring, gentle and frequent waterings, in dry weather, generally anſwers better than giving them in greater quantities.

When the Vines are in flower, even the frequent ſprinkling of the flues and walks in a Hot-houſe, and the border, &c. in a Vinery, will greatly benefit the Vines. A good heat, however, ſhould be kept up at the ſame time, as I have conſtantly experienced that grapes ſet beſt in a vaporous heat of between ſeventy and ſeventy-five degrees.

In a Hot-houſe, if the walks, &c. are ſprinkled when there is a ſtrong ſun, the exhaled moiſture will inſtantly form a kind

but this tree, nevertheleſs, appears to be principally intended, on account of its very ſpreading nature, as appears from the two texts in Ezekiel, and particularly as it is remarkable for over-toping the walls it is planted againſt. See the beautiful Allegory in Pſalm lxxx. of the over-proſperous condition of the Iſraelites; "Thou haſt brought a Vine out of Egypt."

of artificial dew, which is exceedingly nouriſhing to the grapes in their infant ſtate.

When ſtrong fires are kept, if the flues are frequently ſprinkled with water, the heat of them will cauſe a ſteam to ariſe, which will alſo have a good effect.

When the grapes are grown to the ſize of ſmall peaſe, the Vines will require a conſtant ſupply of water, till they are full grown. If the border be kept in a moderate moiſt ſtate during the above period, the Vines will grow luxuriant, and the grapes will ſwell to a large ſize[f]. But when the grapes are nearly

[f] I have frequently had berries of various kinds of grapes, that have weighed between eight and nine pennyweight each.

I ſhall here beg leave to remark, that the berries of all the different ſorts are not equally ponderous in proportion to their dimenſions. Thoſe kinds, which have thick ſkins, and have fleſh of a hard and firm texture, are more weighty than the thin-ſkinned grapes, with delicate and juicy fleſh. From hence we may reaſonably infer, that the latter are moſt eaſy of digeſtion, and conſequently much more wholeſome.

A round thin-ſkinned berry, which weighs between ſeven and eight penny-weight, will generally girth about four inches; and one of the ſame weight, of an oval form, about three and a half inches.

Although grapes of the above deſcription may be deemed exceeding large in this country, yet we are informed that they grow to a much larger ſize in ſome parts abroad. It is even ſaid, that they are ſometimes as large as pigeons eggs.

Two

nearly ripe, the waterings ſhould be leſs frequent, as too much water at that ſeaſon would tend to debaſe their flavour.

When

Two illuſtrious Travellers *, who have publiſhed their obſervations on the preſent ſtate of *Aſia Minor*, in their journey from *Epheſus* give a curious deſcription of a proſpect they enjoyed, of a ſucceſſive courſe of hills and mountains extending from thence, and of a beautiful valley at the bottom of them, through which the river *Cayſter* flowed and emptied itſelf into the ſea. "Among theſe, the lofty *Tmolus* riſes eminent above the reſt; but is more diſtinguiſhed for the excellence of its wines. At the bottom of the extremeſt mountain near the ſea, ſeveral magnificent ruins ſtill remain to be ſeen of *Sardis*, the metropolis of *Lydia*."

"This delightful country is now but thinly inhabited by a few poor *Turks*, and ſome wandering *Arabs*, and few wines are now made there, but by ſome Greek Monks, and chiefly for their own uſe. Some of theſe, though made with little art and culture, are light, generous, and very agreeable." But theſe Gentlemen give a different account of a town called *Sidonijah*, which was famous for the goodneſs of its wines and the quantities made there. "This town is four hours journey diſtant from *Damaſcus*, in the extremity of a fertile extended plain, the See of a Biſhop, and entirely inhabited by *Greek* chriſtians."

"Some of the grapes here are of a remarkable ſize, as large as a pigeon's egg, and of a very exquiſite taſte! Great quantities of them are ſent to *Europe*, and known by the name of Damaſk raiſins. The wines are not made from this kind of grapes, which are chiefly cultivated in their gardens, but from the Vines of the adjacent mountains, of which *Hermon* and *Lebanon* are neareſt." Theſe Gentlemen ſay, (vol. ii. page 260) that the wine which they drank there was, indeed, incomparable. "The beſt is made by the Monks, who have there a celebrated convent. It was of a red colour, very generous, grateful, and ſo light as not to affect the head, though taken freely."

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* *Ægidius Van Egmont, Envoy from the States to the King of Naples, and John Heyman, Profeſſor of the Oriental languages in the Univerſity of Leyden.*

When the crop is gathered, the border ſhould be frequently watered till the leaves of the Vines begin to change from green to red and yellow reſpectively. But from that time, and during the winter, the border ſhould be kept in a dry ſtate.

I have not at any time found it neceſſary to water the leaves of Vines growing in the pine-ſtove, as is by ſome recommended, except ſuch as have been infeſted with inſects. But during a mild rain, I have frequently let down the upper lights of the Hot-houſe, that the Vines at the back wall might reap the benefit of the ſhower.

There is yet another mode of watering the Vine-border, which is worthy of obſervation.

During winter, I have frequently watered the Vine-border with a thick black liquor, the drainage of dunghils[g]; and though this

[g] The drainage of dunghils is the very ſtrength and power of the dung; for water, conſtantly filtering through ſtable-yard dung, certainly robs it of the mucilage and ſaline particles, with which it greatly abounds when newly made; and eſpecially ſuch dung as has lain a conſiderable time in the ſtable, and imbibed a large portion of the urine of the horſes. The ſaline particles, contained in new-made dung, are increaſed by its fermentation, therefore the firſt extract obtained from the dung, after it has undergone its fermentation, may be juſtly conſidered as the cream or eſſence of the manure.

In moſt farm-yards this valuable liquor is generally permitted to run to waſte, which is much to be regretted, and may, in reality, be deemed a public loſs.

The

this practice was intended ſolely to enrich the ſoil, yet it is not improbable but this powerful liquor, by being impregnated with ſaline particles, may communicate a warmth to the roots of the Vine during the winter, and thereby prove ſerviceable in

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The farmer would find his labours well rewarded, by conveying this rich liquor to the moſt convenient part of his farm, which might eaſily be done by the help of a water-cart, ſuch as is uſed to convey water to lay the duſt in the ſtreets and roads, about cities and great towns.

Manure is an article of ſuch vaſt importance in huſbandry, that the farmer ought to pay the greateſt attention poſſible to the enlargement of his ſtock of dung. It is to be wiſhed that it would become a practice to ſtow the farm, fold, and ſtable-yards, with leaves of trees, rotten tan, noxious weeds, ſaw-duſt, moory earth, and ſuch like materials. Theſe ſhould be introduced before the dunghil is formed, and ſhould be laid to a conſiderable thickneſs in the loweſt part of the yard, as they would there receive and imbibe the riches that drain from the dung above.

If this method of proceeding were introduced, many farmers would have an opportunity of collecting materials, whereby they might increaſe their ſtock of dung to more than twice its uſual quantity.

Although ſoils of different qualities admit of improvement by various modes of practice, yet without the aid of manure, the farmer would find his utmoſt exertions of but little value. And though ſome have endeavoured to prove that the earth, when duly pulverized by the action of the plough, does not require manure,* yet experience tells us, that it is the very life and ſoul of huſbandry; and when judiciouſly applied on almoſt every kind of ſoil, its effect will ſeldom diſappoint the expectation of the farmer.

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* *Mr. Tull, in his new huſbandry, tells us, that where the ground is properly managed, manure is an uſeleſs article. But his opinion is now generally and juſtly exploded.*

in that reſpect alſo. However that may be, from the uncommon vigour of the Vines at this place, I have been led into a belief of the utility of this practice. But let me at the ſame time obſerve, that I have always applied this powerful manure (if I may ſo call it) with great caution. I have found the beginning of winter the moſt proper time for uſing this kind of manure; and then I only venture to give two or three plentiful waterings, fearing that if this were to be applied either in the ſpring or the ſummer, or even in too great quantities, it might tend, from its great power, to cauſe the leaves of the Vine to change from a green to a yellow hue. I offer this, however, only as a probable ſpeculation, for I don't certainly know that it would produce that effect, though uſed in ſummer. It ſeems, however, moſt reaſonable to ſuppoſe, that it ſhould be applied when the roots of the Vine are in a ſtate of inaction, as then a winter's rain and froſt may, probably, contribute to qualify it, and to incorporate it with the ſoil.

ON

GRAFTING.

BOOK III.

GRAFTING of Vines is a practice little known in this country, though the advantages reſulting from it are many and important.

I ſhall firſt endeavour to ſtate ſome of the moſt important advantages of grafting Vines, and then lay down the neceſſary directions for performing the manual operations.

Firſt, when a wall is planted with inferior kinds of Vines, the uſual method of ſtubbing them up, and ſupplying their places with better ſorts, is attended with much expence and loſs of time; as in that caſe it will be neceſſary to renew the border with freſh compoſt mould, and ſeveral years muſt elapſe before the wall can be completely furniſhed with new Vines; but by grafting, the nature of the Vines may be changed without expence or loſs of time, for I conſtantly have good grapes from the ſame year's graft; and in a Hot-houſe, the grafts, if permitted, will frequently ſhoot thirty or forty feet the firſt ſummer.

Secondly, in ſmall Vineries, or Vine-frames, where it would be inconvenient at leaſt, if not impoſſible, in the common way, to have any conſiderable variety of ſorts, they may be

procured by grafting different kinds upon one and the ſame plant. A Syrian Vine, now (1789) growing in the Hot-houſe at Welbeck, produces ſixteen different ſorts of grapes.

But what I deem the moſt important advantage is, the improving the various kinds of grapes, and particularly the ſmall kinds, which generally make weak wood. This may be done, as I have conſtantly experienced, by grafting the weak and delicate-growing Vines upon the ſtocks of thoſe that have more robuſt and vigorous ſtamina [a].

The Syrian Vine is, of all others, the moſt proper to be uſed for ſtocks to graft upon, and plants raiſed from ſeed of this ſort, are greatly preferable to plants raiſed either from layers or cuttings. If the ſeed chance to degenerate to a kind of wildneſs, the plants will ſtill be the better for ſtocks, becauſe they will, on that account, riſe with greater vigour [b].

It

[a] The advantages to be gained by engrafting, have appeared conſpicuous in many inſtances, particularly in the ſmall blue Frontinac, engrafted on the Syrian Vine at Welbeck, which has conſtantly produced well-ſized handſome bunches, with berries almoſt as large as thoſe of the black Hamburgh.

[b] The trees, which of themſelves advance in air,
Are barren kinds, but ſtrongly built and fair:
Becauſe the vigour of the native earth
Maintains the plant, and makes a manly birth.
Yet theſe, receiving grafts of other kind,
Or thence tranſplanted, change their ſavage mind:
Their wildneſs loſe, and quitting nature's part,
Obey the rules and diſcipline of art.

VIRG.

It may, perhaps, be imagined, that ſtocks of the above deſcription would tend to debaſe the flavour of the grapes grafted upon them; but experience teaches us, that the ſtock does not impart any ſuch quality to the fruit; for it is well known that the Golden Pippin, when grafted upon a crab-ſtock, produces the higheſt-flavoured fruit.

It has been aſſerted, that great advantages might, or would reſult, from grafting the Vine upon the cherry-ſtock [c].

[c] " If a *Vine* be grafted on a common cherry, or any other of the kind, the " grapes which it produces will be ſo *remarkably* forward, as to be ripe in " the ſeaſon of *cherries*. But it is very difficult to graft a Vine well on a " cherry-ſtock, ſo as to make it thrive and flouriſh. The following method " has, however, been generally ſucceſsful.

" FIRST, bore a hole with an auger in the trunk of the cherry-tree; in this " hole inſert the ſcion of the Vine, and let it grow there till it has filled the " hole of the auger, and is cloſely joined to the cherry-tree. Then cut off " the Vine-branch from the Vine, after which it will draw all its nouriſh- " ment from the cherry-tree, whoſe ſap will haſten the formation and maturity " of the grapes, which will be ripe near *two months* ſooner than ordinary *.

I have, from experience, great reaſon to believe, that the Vine and cherry will not be made to unite and incorporate, even by inarching, which is the moſt certain of all the ways of grafting; and much leſs by the method as ſet forth above. For the cutting the ſcion and ſtock ſmooth, and fitting them together with exactneſs, are the firſt principles in grafting; whereas boring with an auger will naturally bruiſe and tear the bark, and muſt therefore deſtroy theſe intentions.

" The

* *A Treatiſe on Grafting and Inoculation, (anonymous) Saliſbury, 8vo, 1780, and ſold by Fielding.*

Now though I dare not hazard the recommendation of a method founded on ſuch chimerical principles, I ſhall be far from prejudicing my readers againſt any experiments of the ſort; I do not aſſert that this proceſs cannot ſucceed, but this I beg leave to ſuggeſt, that it would be right for thoſe, who chooſe to make the trial, not to entertain too ſanguine expectations of its ſucceſs. In a purſuit of this kind, the operator would do well, previouſly to conſider the affinity that ought to ſubſiſt between the ſtock and the ſcion, as plants will not unite and harmonize from their ſimilar external appearances. It is neceſſary that the ſtock and the ſcion ſhould be both of the ſame family, or lineage, according to the ſexual ſyſtem of botany, in order to form a ſubſtantial and laſting union.

Having

" The *Certoſa* [Carthuſians *] ſtands in a fine air and pleaſant ſituation, in the " midſt of vineyards. They have ſeveral courts with cloyſters, one as large " as the great court of *Trinity* College, *Cambridge*. Each Father has to his " cell a pretty garden, ſome of which are very curious, having many exotick " plants, &c.

" One of them had fiſh in his ciſtern, which ate lettuce out of his hands. This " Father had tried ſome experiments in grafting; as of a Vine on a fig-tree, " Jaſmine on an orange, which had taken and grew †. All of them have " ſome employment for their vacant hours ‡."

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* *At Bologna.*

† *This account may ſerve to paſs among monaſtic legends, but it is too abſurd to gain credit with the profeſſional gardener.*

‡ *Obſervations made in travelling through France and Italy, &c. by Edward Wright, Eſq*; vol. ii. page 435.

Having pointed out ſome of the principal advantages accruing from engrafting of the Vine, I ſhall now explain the method of performing the manual operation.

At the pruning ſeaſon, make choice of cuttings for grafts, or ſcions, from the beſt bearing branches of the ſorts of Vines intended to be propagated. In general, the bottom part of the laſt year's ſhoot is to be preferred; but in well-ripened vigorous wood, any part of the ſhoot will anſwer, provided it be not too long-jointed. The cuttings ſhould be preſerved in pots till the grafting ſeaſon, in the manner already deſcribed, page 58.

The proper ſeaſon to graft Vines depends upon their ſituation. Vines in a Pine-ſtove ſhould be grafted in the beginning of January, but the middle of March is a proper ſeaſon to graft Vines growing in the open air. In general, Vines ſhould be grafted about three weeks before they begin to break into bud.

Upon ſmall ſtocks, not more than one inch in diameter, cleft-grafting will be found the moſt proper; but upon larger ſtocks, whip-grafting is to be preferred.

In both methods, much care ſhould be taken in fitting the ſtock and ſcion together, and the operation ſhould be performed with great exactneſs.

When

When the ſtock and ſcion are well fitted, the graft ſhould be faſtened with the ſtrands of baſs-matting, and ſhould then be covered with clay in the uſual way.

Vines do not harmonize with ſo much freedom as commoner fruit; for though the ſcion will ſometimes begin to puſh in a few weeks, yet it will frequently remain in a dormant ſtate for two or three months; and during this period it will be neceſſary to ſtrip the ſtock of all the ſhoots it may produce as ſoon as they appear; and, in order to preſerve the ſcion in a vegetative ſtate, it will be abſolutely neceſſary to keep the clay moderately moiſt, which may eaſily be effected by wrapping it round with moiſtened moſs, and keeping the moſs conſtantly ſprinkled with water.

When the ſcion has made ſhoots five or ſix inches long, the clay and bandage ſhould be carefully taken off; and the clay may be removed, without injuring the graft, when it is in a moiſt ſtate.

Vines will frequently prove ſucceſsful by both the above-mentioned methods, but ſtill the moſt eligible way of all ſeems to me to be that of grafting by approach: Indeed I have ſeldom known any plants miſcarry, that have been grafted this way. Now in this caſe it is neceſſary to have the plant, intended to be propagated, growing in a pot. Strong plants, that have been two or three years in pots, are to be preferred; but

but plants from the nurſery may be potted, and grafted in the ſame ſeaſon, if brought into a Hot-houſe or Vinery; for the great warmth of either will generally cauſe plants, brought out of the open air, to puſh with vigour, and to form new roots, which will ſupport the plant, and greatly facilitate its forming an union with the ſtock.

I have conſtantly had fine grapes, and the grafts have made good wood, the firſt ſeaſon, by every method of grafting, but particularly by the laſt. In which it is obvious that the graft has a double ſupport, viz. from the ſtock, as well as from the plant in the pot.

In this method it will be neceſſary to let the clay and bandage remain two or three months after the graft has formed an union; for if taken off at an earlier period, the grafted part of the plant will be very liable to ſpring from the ſtock.

The pot ſhould be plentifully ſupplied with water till the month of Auguſt, when the graft ſhould be ſeparated from the plant in the pot. Two or three inches of wood below the bottom of the graft may be left, but ſhould be taken clean off at the next winter's pruning.

ON THE DIFFERENT

SPECIES OF INSECTS

THAT INFEST THE

VINE;

With proper Methods of DESTROYING or PREVENTING them.

ALTHOUGH the Vine is not very liable to be infeſted with inſects when growing in the open air in this country[d], yet few plants ſuffer more from their ravages than Vines under glaſs, eſpecially thoſe growing in Pine-ſtoves.

The

[d] I believe the vineyards abroad are not generally ſubject to be infeſted with inſects: We are informed, however, that there have been inſtances where the Vines have been ſo greatly injured, as to cauſe a conſiderable decreaſe in the produce of the vintage. This I preſume only happens in dry ſummers, and in the countries that lie near the tropics.

" The iſle of Pico has its name from the peak or high mountain upon it. This " iſland is not only the largeſt, but alſo the moſt populous of the Azores, " containing 30,000 inhabitants. It has no corn fields, being every where " covered with vineyards, which have a moſt enchanting appearance on the " eaſy ſlope at the foot of the mountain. The ſeaſon of vintage is the ſeaſon " of mirth and feſtivity, when a fourth, or even a third part of the inhabi-

" tants

The conſtant warmth kept in Hot-houſes during winter, ſerves to preſerve the ſucceſſion of various deſtructive inſects from one ſeaſon to another.—I ſhall here mention the ſeveral ſorts with which the Vine is liable to be infeſted, and then preſcribe the proper methods for deſtroying or preventing them.

1. The Acarus, commonly called the Red Spider. This ſpecies is, doubtleſs, the moſt pernicious; and as fire-heat

" tants of Fyal, remove to Pico with their families, down to their ſmalleſt " domeſtic animals. It is affirmed that a quantity of grapes, which would " yield three thouſand pipes of wine, are eaten at that time, every perſon " indulging his taſte with this delicious fruit, though no people are more " ſober and frugal at their meals than the Portugueze. Formerly the vintage " produced annually 30,000, and ſometimes in fortunate years 37,000 " pipes of wine; but a kind of diſeaſe attacked the Vines ſome years ago, " which cauſed the leaves to drop off at the time when the grapes require " to be ſheltered from the ſun: I ſuſpect this to be cauſed by ſome ſpecies " of inſect."

Forſter's Voyage, vol. 2, page 597.

" In Spain, the ſeaſon of making wine is looked upon as a time of great " feſtivity, and celebrated with rejoicings that border on licentiouſneſs. " While the vintage continues, all diſtinction and reſpect is forgot: The " owner of the vineyard puts aſide his auſterity with his cloak, and cries " out to his ſervants, " Let us be merry, my companions, wiſdom is fled " out of the window." A cuſtom that has been preſerved in this country " ever ſince the Romans ſet footing in it."

Carter's Journey from Gibraltar to Malaga, vol. ii. page 397.

greatly encourages its increaſe, it generally abounds in moſt Hot-houſes.

The Acari frequently attack the leaves of the Vine early in the ſummer, and as their increaſe in dry weather is amazingly quick and great, they will, without ſome method of controul, ſoon greatly endamage, and, in time, totally deſtroy the foliage.

They generally reſide and breed on the under-ſide of the leaves, and the infeſted leaves are very diſtinguiſhable as ſoon as they are attacked by them, for the inſect wounds the fine capillary veſſels with its proboſcis, and this cauſes the upper ſurface of the leaf to appear full of very ſmall dots, or ſpots of a light colour. When the Acari are very numerous, they work a fine web over the whole under-ſide of the leaf, as alſo round the edges thereof; and it is curious enough to obſerve, that they commonly carry this web in a ſtreight line, from one angular point of the leaf to another, on which boundary line, in a warm day, they paſs and repaſs in very great numbers.

The Acari, however, do not confine themſelves to the leaves only, but attack the bunches of grapes alſo, eſpecially at the time when they are almoſt ripe; and as they extract the juices from them, the grapes ſoon become ſoft, flabby, and ill-flavoured.

2. The Thrips. This ſpecies abounds in moſt Hot-houſes, and is hurtful to moſt plants kept in them. It is often injurious

to

to Vines growing there; and, as I have obſerved, more particularly ſo to the ſorts that produce white berries.

This ſpecies, however, is not confined to the Hot-houſe only, but is commonly found upon plants growing in the open air, as alſo upon flowers: Theſe inſects are often very numerous upon the flowers of pinks and carnations.

The Thrips ſometimes attack the young ſhoots of Vines growing in the open air, eſpecially thoſe of weak Vines, or Vines newly planted.

If young ſhoots chance to receive any injury by late ſpring froſt, the tender part of the leaf will immediately curl up, and change to a dark-brown colour; and in this ſtate the Thrips generally attack them with great greedineſs, eſpecially the white Sweetwater and white Muſcadine kinds. Theſe ſorts are generally planted againſt common walls.

The Thrips, however, are ſeldom injurious to Vines growing in the open air, except in the ſpring; and to thoſe in the Hot-houſe they are moſt hurtful when the grapes are nearly ripe. They attack the bunches as well as the leaves, and commonly prey upon the extremities of the berries, but more particularly at the end next the foot-ſtalk. In white grapes, the part of the berry injured changes to a dark colour, the foot-ſtalk turns black, and the berry withers.

3. The Aphis. The Aphides are, I believe, the moſt numerous of all the inſect tribe. This ſpecies infeſts the brawny oak, as well as the minuteſt weed. What are called honeydews in the ſummer, are occaſioned by this ſpecies of inſect. The young ſhoots of Vines are ſometimes infeſted with the Aphides; but as Vines generally grow exceedingly rapid, theſe inſects do not often greatly injure them.

4. There are two or three kinds of Cocci that ſometimes infeſt the Vine, viz. The Coccus Heſperidum, and the Coccus Adonidum. But as ſuch inſtances rarely occur, and theſe inſects are not very prejudicial to the Vine, I ſhall paſs over them with only obſerving, that the latter of theſe are ſometimes miſtaken for the crimſon-tinged Pine-bug. Theſe often abound, both in Hot-houſes and Conſervatories, and breed upon many kinds of plants kept in them, ſuch as the coffee-tree, the oleander, &c.

Having mentioned the ſeveral ſpecies of inſects with which the Vine is liable to be infeſted, I ſhall now lay down the proper methods for deſtroying them.

All the foregoing ſpecies of inſects, the Acarus excepted, may be deſtroyed by a ſtrong fumigation of tobacco.

The method of fumigating Hot-houſes, &c. either by the bellows or by the ſmoaking-pot, being now generally underſtood,

ſtood, it is unneceſſary to ſay much upon this head; I ſhall therefore only beg leave to ſubjoin the following obſervations:

1ſt. It would be improper to fumigate either Vinery or Pine-ſtove, where there are Vines late in the ſpring, or in the ſummer, becauſe the ſmoak would injure the grapes, by giving them a diſagreeable flavour.

2dly. When either a Hot-houſe or Vinery is infeſted with any of the above-mentioned inſects, or when they may have been very numerous the preceding ſeaſon, it will be neceſſary to deſtroy them effectually, before the Vines come into flower; and this may be done by fumigating two or three different times, at the diſtance of three or four days between each operation.

Pine-ſtoves are much more liable to be infeſted with theſe inſects, than either Grape-houſes or Vineries, becauſe in the latter it is uſual to take off the glaſs-frames during the winter, by which means the inſects generally periſh: But the warmth of pine-ſtoves ſerves to protect the inſects through the winter, as I have already obſerved.

In Pine-ſtoves, the Thrips are often greatly encouraged by many kinds of vegetables kept there, and particularly by kidney-

kidney-beans. The increaſe of the inſect upon this plant in the ſpring is ſo exceedingly rapid, that it is not unuſual to ſee whole crops of this plant entirely deſtroyed by them: In order, therefore, to prevent the increaſe of theſe inſects, it will be expedient, after the ſtove has been fumigated, firſt to remove all ſuch plants as encourage them; then to ſow a freſh crop of kidney-beans in pots immediately, and theſe ſhould be placed all over the flues, &c. ſo that in caſe any inſects ſhould have eſcaped the fumigation, the young bean plants may attract them; and as ſoon as theſe plants appear to be infeſted, take them away, and ſow a freſh crop for the ſame purpoſe.

Of all the inſect tribe the Acari are the moſt pernicious, and particularly ſo to Vines growing in Pine-ſtoves: Indeed they often prove fatal to them.

Before I had diſcovered an effectual method of deſtroying them, it uſed to grieve me much to ſee the Vines often in a languiſhing ſtate from theſe inſects; and as I ſtill frequently ſee Vines growing in Pine-ſtoves in the ſame predicament, I flatter myſelf that what I have now to offer upon this head will not be deemed the moſt unacceptable, or leaſt uſeful, part of this work. For I can aſſure my readers, that I have, by many years experience, found the following method efficacious and ſatisfactory in every reſpect:

To

To one pound of flowers of ſulphur put two ounces of common ſcotch ſnuff; (very good tobacco duſt will anſwer equally well.) Let theſe be well mixed together; then take a ſmall bruſh, ſuch as is uſed for common painting, dip it lightly in the ſulphur, then lay one hand on the upper ſurface of the leaf, and with the other draw the bruſh very gently backwards and forwards all over the under-ſide: By this means a little ſulphur will be left on the leaf. The Acarus being ſoft and delicate in its nature, is hereby deſtroyed with the moſt gentle touch: The bruſh alſo moſt readily wipes off their web as well as their globular tranſparent eggs, which are by a fine membrane faſtened to the leaves; and thus we are ſecured from the danger of a ſucceeding brood.

This proceſs may to ſome have the appearance of a tedious operation; and indeed, when Vines are injudiciouſly trained, it certainly muſt be attended with great trouble; but it is very eaſily performed upon Vines trained in the regular method here ſet forth; and a ſingle operation is generally ſufficient for a whole ſeaſon.

I have commonly given a general dreſſing to the Vines in the Pine-ſtove at Welbeck, as ſoon as I have obſerved the Acari make their appearance upon any part of them; and I have ſeldom found it needful to repeat the operation during the ſummer.

I ſhall juſt beg to obſerve, that ſulphur alone is ſufficient for the above purpoſe; but the ſmall quantity of ſnuff recommended to be uſed along with it, renders the mixture equally powerful and fatal to the Thrips alſo, and therefore the more adviſable.

ON

ON THE

AGE AND STATURE OF THE VINE;

AND OF THE

DURABILITY OF VITIGINOUS WOOD.

THERE is no part of the Hiſtory of the Vine ſo aſtoniſhing as that of its age and ſtature: Of all the various kinds of fruit-bearing trees that endure the climate of this iſland, the Vine is the moſt unlikely to exceed in either of theſe particulars. Without the aſſiſtance of man, and the aid and ſupport of ſome other tree, the Vine certainly would be of a very humble growth[c]; for indeed the idea one forms of a

[c] "Grapes are not only ſpontaneous in *Carolina*, but in all the Northern parts "of *America*, from the latitude of 25 to 45; the woods are ſo abundantly re- "pleniſhed with them, that in ſome places, for many miles together, they cover "the ground, and are an impediment to travellers, by entangling their horſes "feet with their trailing branches; and lofty trees are over-top'd and wholly "obſcured by their embraces. From which indications one would conclude, "that theſe countries were as much adapted for the culture of the Vine as "*Spain* and *Italy*, which lie in the ſame latitude. Yet by the efforts that have "been hitherto made in *Virginia* and *Carolina*, it is apparent that they are "not bleſſed with that clemency of climate, or aptitude for making wine, as the

Vine-tree, in its rude and natural ſtate, is extremely ſimilar to that of a large bramble-buſh[f]; yet, by care and proper cultivation,

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" the parallel parts of Europe, where the ſeaſons are more equal, and the " ſpring not ſubject, as in *Carolina*, to the viciſſitudes of weather, and alter- " nate changes of warmth and cold, which, by turns, both checks and agitates " the riſing ſap, by which the tender ſhoots are often cut off. Add to this " the ill effects they are liable to by too much wet, which frequently happen- " ing at the time of ripening, occaſions the rotting and burſting of the fruit.

" Though the natural cauſes of theſe impediments may not preſently be ac- " counted for, yet it is to be hoped that time and an aſſiduous application will " obviate theſe inclement obſtructions, of ſo beneficial a manufacture as the " making of wine may prove."

Cateſby's Natural Hiſtory of Carolina, vol. i. page 22.

[f] Although the Vine makes but a mean and deſpicable appearance in its rude and natural ſtate, yet ſcarcely any plant ſurpaſſes it in elegance and beauty when trained by art.

Vines judiciouſly propagated againſt a wall have a moſt pleaſing appearance; and if trained, as often is practiſed on the roof of a Hot-houſe, &c. and the different kinds of grapes (with their various-coloured berries) are intermixed with propriety, there is a wonderful richneſs and beauty at the time when the fruit is near ripe. But the method of training Vines, in the manner of feſtoons, as practiſed in ſome parts of Spain and Italy, affords a ſcene ſuperb almoſt beyond the powers of deſcription.

" I walked leiſurely the beſt part from *Molin de Reys* to this town *, with a " proſpect ſufficiently fine all around me, to put any body in mind of the " Elyſian fields. It conſiſted of an endleſs continuation of Vines, ſupported " by

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* *Barcelona.*

cultivation, we find it ſometimes arrive to a large bulk, and, in point of longevity, to vie even with the venerable oak. Many kinds of fruit-trees, and even ſome that riſe to a competent ſize, much reſembling timber, are, nevertheleſs, exceedingly

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" by mulberry-trees regularly planted, the Vine-branches ſo diſpoſed as to " form rich feſtoons from one tree to the other. I have ſeen ſuch feſtooned " Vineyards in ſome parts of Italy, eſpecially in the dutchies of Mantua and " Modena, with this only difference from the Catalonian faſhion, that inſtead " of mulberry-trees, the Modeneſe and Mantuan Vines are ſupported by " elms.

" Think how rich the Catalonian ſoil muſt be, that affords nouriſhment not " only to thoſe Vines and mulberry-trees, but alſo to the wheat that is ſown " under their ſhade*! Nay, there are vineyards in this country in which, " after the corn-crop, they get another of ſome other grain. What a delight- " ful object to the eyes of the honeſt huſbandman, to ſee ſo much fertility " come thus forth to reward his well-ſpent labours !"

Baretti's Travels, vol. iv. page 73.

It is much to be regretted that Mr. Baretti did not inveſtigate and deſcribe the ſoil which is ſaid to be thus prolific. The feſtoon vineyards in Lombardy are not

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* *Mr. Swinburne, in his Travels through Spain, ſays,* " *Their vintages are com-* " *monly very plentiful. This autumn,* 1775, *there was ſuch a ſuperabundance of* " *grapes in the valley of Talarn, in the neighbourhood of Pallas, that whole vineyards* " *were left untouched, for want of veſſels to make or hold the wine in. Notice was* " *paſted upon the church doors, that any one was at liberty to take away what quan-* " *tity he pleaſed, on paying a ſmall acknowledgment to the proprietors. The beſt red* " *wine of Catalonia is made at Mataw, north of Barcelona, and the beſt white at* " *Sitges, between that city and Tarragona.*" Page 65.

exceedingly ſhort-lived; ſo that though ſome few of the mulberry-trees planted in the reign of King James the Firſt, may be yet in a fruit-bearing ſtate, and alſo ſome of the fig-trees at Lambeth palace, thought coeval with Archbiſhop Laud, yet

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not leſs elegant than the above, although the Vines are there trained ſomewhat differently. A Celebrated Author has thus deſcribed them:

"THE country of *Lombardy* is perfectly flat, a rich ſoil, fine paſtures and corn-
"fields, abundance of Vines, and white mulberry-trees for the ſilk-worms,
"the Vines running up their branches. This country is the fineſt we ſaw in
"*Italy*, unleſs you'll except the *Campagna Felice* about *Naples*.

"We obſerved few timber-trees, only Elms and Poplars, which ſupport the
"Vine-branches, as I obſerved before, of the mulberry-trees. The roads are
"very broad and even, and moſt pleaſant travelling in the ſummer; but ſome
"of them deep enough in the winter: The hedges by the road ſide are many
"of them cut, and managed with a great deal of exactneſs. The Vines run
"up the bodies of the trees, and intermix themſelves with their branches
"*(altas maritant populos)*; and the extremities are drawn out from tree to tree,
"and hang in feſtoons between them along the road hedges. From thoſe
"hedges there go rows of trees along the grounds, at about forty or fifty yards
"diſtance from each other; the Vines all running up their bodies. And here,
"beſides the feſtoons hanging from tree to tree, the Vine-branches are ex-
"tended right and left, and faſtened to a row of ſtakes on each ſide, which
"run parallel to the trees: And theſe ſtakes are as ſo many pillars, ſupport-
"ing a ſort of pent-houſe, or oblique roof, which is formed by the Vine-
"branches on each ſide of the trees. Thus are the grounds diſpoſed and
"planted on both ſides the road, and the trees with the Vines managed in this
"ſort of natural architecture, generally ſpeaking, all over *Lombardy*."

Wright's Travels, vol. i. page 31.

yet theſe are no impeachment of the truth of the obſervation, ſince it is no uncommon thing for men to ſee trees running into apparent decay, which their own hands have raiſed and planted: It conſequently is a circumſtance moſt remarkable, relative to the Vine, that it is of ſuch a laſting duration as to ſurvive many ages.

Mr. Miller, in his Gardener's Dictionary, tells us that the vineyards in ſome parts of Italy will hold good above 300 years, accounting thoſe of 100 years as young Vines.

Aſtoniſhing as the above account, reſpecting the age of the Vine, may appear at firſt ſight, the wonder will, in a great meaſure, ceaſe, when we compare it with the following paſſage taken from Mr. Evelyn's Silva, in which that of its bulk will not ſeem leſs ſurprizing.

" The particulars were too long to recount of the old *Pla-*
" *tanus*, ſet by *Aganemnon*, mentioned by *Theophraſtus*, the
" Herculean Oaks, the Laurel near *Hippocrene*, the Vatican
" *Ilex*, and the Vine which was grown to that bulk and woodi-
" neſs, as to make a ſtatue of *Jupiter*, and columns in *Juno's*
" temple: At preſent it is found that the great doors of the
" cathedral at *Ravenna*, are made of ſuch Vine-tree planks,
" ſome of which are twelve feet long and fifteen inches broad,
" the whole ſoil of that country producing Vines of a prodi-
" gious growth.

" Such

" Such another in *Margiana* is ſpoken of by *Strabo*, that " was twelve feet in circumference. *Pliny* mentions one of " *ſix hundred* years old in his time; and at *Ecoan*, the late " Duke of *Montmorancy's* houſe, is a table of a very large di- " menſion, made of the like plant; and that which renders it " the more ſtrange is, that a tree growing in ſuch a wreathed " and twiſted manner, rather like a rope than timber, and " needing the ſupport of others, ſhould arrive to ſuch a bulk " and firm conſiſtence; but ſo it is, and *Olearius* affirms, that " he found many Vines near the *Caſpian* ſea, whoſe trunks " were as big about as a man."

" *Pliny*, ſpeaking of the Vine, ſays, The ancients very " juſtly reckoned Vines among trees, on account of their mag- " nitude. We ſee now an image of Jupiter at *Populonium* *, made " out of *one* †, and incorrupted after ſo many ages. Alſo a " *Patera* ‡, at *Maſſilia* §. At *Metapontum* ||, the Temple of " *Juno*, was ſupported by vineal columns. And even now, " as reported, the roof of the Temple of *Diana* at *Epheſus* is " aſcended by ladders, made of one *Cyprian* Vine, for in Cy- " prus they grow up to an extraordinary ſize. No wood is of " a more laſting nature." *Lib.* xiv. chap. 1.

The Naturaliſt obſerves afterwards, and very ſenſibly, that the above particulars are to be underſtood of Vines in their rude and

* A city of Italy.—† A ſingle Stock only.—‡ Sawn acroſs, we muſt ſuppoſe, and not longitudinally.—§ Marſeilles.—|| Metapontum is in Calabria.

and uncultivated ſtate, ſince by pruning and dreſſing, the vigour of the ſtock is diſtributed and transfuſed into the branches.

I have been informed that there are, upon the Barbary coaſt, Vines now growing of ſurpriſing dimenſions, ſome of them having trunks eight or nine feet in circumference. If the age of theſe could be aſcertained, it would, no doubt, be found equally aſtoniſhing. We are not informed whether it be any particular kind of Vine that grows to this amazing ſize, or whether the ſize ought not to be attributed to the genius of the ſoil and air of that country.

We cannot poſſibly expect ſuch ſurpriſing inſtances of antiquity in this country, on account of the unfavourableneſs of our climate from the Northern ſituation of the iſland.

Indeed we learn from hiſtory that grapes, as well as moſt other ſorts of fruit, were brought, by ſlow degrees, into the Weſtern parts of Europe, and principally from Aſia and Egypt [g].

The

[g] " In the more remote ages of antiquity, the world was unequally divided. The " Eaſt was in the immemorial poſſeſſion of arts and luxury, whilſt the Weſt " was inhabited by rude and warlike barbarians, who either diſdained agri- " culture, or to whom it was totally unknown. Under the protection of an " eſtabliſhed government, the productions of happier climates, and the induſtry " of more civilized nations, were gradually introduced into the Weſtern " countries

The Vine, however, when planted in a ſoil it delights in, will grow to an amazing ſize and expanſion, even in this country. I ſhall beg leave here to produce two or three inſtances of Vines covering a ſurpriſing area of walling.

At

" countries of Europe, and the natives were encouraged, by an open and pro-
" fitable commerce, to multiply the former, as well as improve the latter. It
" would be almoſt impoſſible to enumerate all the articles, either of the animal
" or the vegetable reign, which were ſucceſſively imported into Europe from
" Aſia and Egypt *; but it will not be unworthy of the dignity, and much
" leſs of the utility of an hiſtorical work, ſlightly to touch on a few of the
" principal heads.

" 1ſt. Almoſt all the flowers, the herbs, and the fruits, that grow in our European
" gardens, are of foreign extraction, which, in many caſes, is betrayed, even
" by their names: The apple was a native of Italy, and when the Romans
" had taſted the richer flavour of the apricot, the peach, the pomegranate,
" the citron, and the orange, they contented themſelves with applying to all
" theſe new fruits the common denomination of *apple*, diſcriminating them
" from each other by the additional epithet of their country.

" 2d. In the time of Homer, the Vine grew wild in the iſland of Sicily, and, pro-
" bably, in the adjacent continent; but it was not improved by ſkill, nor did it
" afford a liquor grateful to the taſte of the ſavage inhabitants †. A thouſand
" years afterwards, Italy could boaſt, that of the fourſcore moſt generous
" and celebrated wines, more than two-thirds were produced from her own
" ſoil ‡. The bleſſing was ſoon communicated to the Narbonneſe province
" of

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* *It is not improbable that the Greeks and Phœnicians introduced ſome new arts and productions into the neighbourhood of Marſeilles and Gades.*

† *See Homer Odyſſ.* Lib. xiv. ver. 358.

‡ *Plin. Hiſt. Natur.* Lib. xiv.

A remarkable Vine growing at Northallerton.

Published January 1st 1790 by Wm Speechly, as the Act directs.

At Northallerton, in Yorkſhire, there is a Vine now (1789) growing, that once covered a ſpace containing 137 ſquare yards; and it is judged, that if it had been permitted, when in its greateſt vigour, to extend itſelf, it might have covered three

" of *Gaul*; but ſo intenſe was the cold to the North of the Cevennes, that, " in the time of Strabo, it was thought impoſſible to ripen the grapes in thoſe " parts of Gaul *. This difficulty, however, was gradually vanquiſhed; and " there is ſome reaſon to believe, that the vineyards of Burgundy are as old " as the age of the Antonines †.

" 3d. The Olive, in the Weſtern world, was the companion as well as the " ſymbol of peace. Two centuries after the foundation of Rome, both " Italy and Africa were ſtrangers to that uſeful plant; it was naturalized in " thoſe countries, and at length carried into the heart of Spain and Gaul. " The timid errors of the ancients, that it required a certain degree of " heat, and could only flouriſh in the neighbourhood of the ſea, were in- " ſenſibly exploded by induſtry and experience ‡.

" 4th. The cultivation of flax was tranſported from Egypt to Gaul, and en- " riched the whole country, however it might impoveriſh the particular " lands on which it was ſown §.

" 5th. The

* *Strab. Geograph.* lib. iv. p. 223. *The intenſe cold of a Gallic winter was almoſt proverbial among the ancients.*

† *In the beginning of the fourth century, the orator Eumenius (Panegyric.* veter. viii. *6th edit. Delphin.) ſpeaks of the Vines in the territory of Autun, which were decayed through age, and the firſt plantation of which was totally unknown. The Pagus Arobrignus is ſuppoſed, by M. Danville, to be the diſtrict of Beaune, celebrated even at preſent for one of the firſt growths of Burgundy.*

‡ *Plin. Hiſt. Natur.* lib. xv.——§ *Plin. Hiſt. Natur.* lib. xix.

or four times that area. The circumference of the trunk or ſtem, a little above the ſurface of the ground, is three feet eleven inches. It is ſuppoſed to have been planted 150 years ago; but from its great age, and from an injudicious management, it is now, and has long been, in a very declining ſtate.

There are many other Vines growing at Northallerton, which are remarkable for their ſize and vigour.

The ſoil is light and rich, of a dark colour, and inclining to ſand.

At Valentine, near Ilford in Eſſex, the Seat of the late Sir Charles Raymond, Bart. there is a Vine now growing, whoſe branches extend and furniſh the entire Roof of a Pine-ſtove, which is ſeventy feet long by eighteen feet broad. And moreover, ſome of the branches are trained downwards, and alſo cover great part of the back wall of the ſaid building.—The Vine, which is the Black Hamburgh, was planted in the year 1758, and grows

" 5th. The uſe of artificial graſſes became familiar to the farmers both of Italy " and the provinces, particularly the Lucerne, which derived its name and " origin from Media ‖. The aſſured ſupply of wholeſome and plentiful " food for cattle during winter, multiplied the number of the flocks and " herds, which, in their turn, contributed to the fertility of the ſoil."

The Hiſtory of the Decline and Fall of the Roman Empire, by Edward Gibbon, Eſq; vol. 1. chap. ii. page 52.

‖ *See the Agreeable Eſſays on Agriculture, by Mr. Harte, in which he has collected all that the ancients and moderns have ſaid of Lucerne.*

grows entirely in the inſide of the ſtove. The girth of the main ſtem, at two feet from the ground, is about thirteen inches.

The Gardener informed me, that for ſome years paſt he, upon an average, has made about one hundred pounds per ann. of the produce of this tree. But at the time I ſaw it in the year 1788, (and juſt before the grapes were ripe) the crop was ſo very moderate, that had the whole been ſold at the high price of five ſhillings per lb. it could not poſſibly have made a ſum equal to half that amount. The bunches, however, in general, were ſingularly fine, and compoſed of large and well-ſwelled berries.

This extenſive Vine was exceedingly robuſt, and under a very judicious management. The worthy Gardener that planted it has, from that time, had it entirely under his own care.

My eſteemed and learned friend, the Rev. Mr. Philip Lawrents, Head Maſter of the ſchool at Bury in Suffolk, has favoured me with the following elegant and ſurprizing account of a Vine now growing there:

January 6, 1786.

" If credit may be given to our Gardeners, the nature of our " *Bury* ſoil is particularly favourable to the *gooſberry*, the *pear*, " and the *Vine*. By all theſe, but eſpecially by the produce of

" the Vine, my neighbour *Gervaſe Coe* is getting money very " faſt. One Vine, which he calls the *Black Cluſter*, covers " forty-four yards in length, of a wall ten feet high. Some of " the branches have been ſuffered to run over the wall, and " cover about twelve yards more in length on the other ſide. " This extenſive plant is about five or ſix and thirty years old. " But this is no *datum* by which we muſt calculate the pro- " portion of its annual growth, for, during near half the time " of its exiſtence, it was, by its proximity to places unfit to " receive its branches, confined within very narrow limits, and " to judge from its progreſs within theſe laſt ſeven or eight " years, it might, if it had been permitted, have covered three " or four times the *area* of wall which it does at preſent.

" That part of the wall, againſt which this Vine was firſt " trained, has a South aſpect. But three-fourths of the walling " which it now covers face the Eaſt, and the twelve yards over " the wall the Weſt.

" As no wine is ever made of the whole produce of it, and " indeed none, except in very backward autumns, the owner " cannot gueſs at the quantity of juice which it might yield. " The cluſters or bunches hang very thick, and each weighs " from half a pound to a pound.

" The public papers having lately taken notice of the pro- " lific excellence of foreign Vines, numbering ſometimes forty " cluſters

" cluſters on one ſhoot, I was tempted to examine my neigh-
" bour's Vine, and upon ſome vigorous ſhoots which had been
" left with nine or ten eyes or gems, to fill up vacant places, I
" reckoned above forty cluſters. This will ſerve to give you
" ſome idea of this wonderful tree. At the height of one foot
" and a half from the ground, the trunk is only eight inches
" in circumference: Below that pitch are ſome irregular pro-
" tuberances, which it would be unfair to ground any calcu-
" lations upon; however, not to keep back any thing which
" tends to information, the circumferences, where theſe protu-
" berances are the fulleſt, I have meaſured, and find to be
" thirteen inches. From this ſwollen part iſſue ſome trifling
" ſhoots, and belonging to it are ſmall ſtumps of other ſhoots,
" formerly cut down, which ſeem to have occaſioned the irre-
" gularity here mentioned. Still lower, and within an inch or
" two of the ground, the ſtem girts but between nine or ten
" inches; finally, cloſe to the ground are three or four diva-
" ricating branches of a very moderate ſize, which furniſh the
" wall with ſomewhat more than a fourth of its foliage; ſo that
" by the trunk girting eight inches, is meant the main trunk.

" The Vine has been pruned ſome weeks: The number of
" eyes left upon this year's ſhoots is various in proportion not
" only to the vigour of the ſhoot, but of the ſpace alſo to be
" filled up.—In moſt places, from three to five eyes is the
" general ſtandard; but there are many ſhoots with from
" eight to ten eyes left upon them; and at the extremities of
" the

" the Vine, as much of the wood as was perfectly ripe has
" been left.—In this part you have ſhoots with eighteen, ſome
" with twenty-two eyes. Each of theſe (if one may judge
" from preceding years) will throw out a ſhoot, bearing, upon
" an average, of the ſhoots in the whole Vine, two cluſters and
" a half; for the Gardener aſſures me, that the cluſters are
" from one to four on a ſhoot. Pleaſe to obſerve likewiſe,
" that each ſhoot on that of the preceding year, which had
" numerous eyes left on, is not leſs prolific than the ſhoots of
" a ſmaller fraternity. Had the Vine been always pruned in
" this manner, and allowed to expand itſelf, (as it has been
" ſuffered to do theſe three or four years paſt in particular)
" it is incredible what ſurface the main ſtem might have ſufficed
" to cover.

" The ſoil is a light, looſe, browniſh mould, lying about two
" feet thick on a looſe ſand, with coarſe gravel, and at the
" depth of twenty feet you come to the water."

ON

ON

VINEYARDS.

BOOK IV.

A Treatiſe on the Culture of the Vine would be incomplete and deficient, was I to omit giving ſome account of the formation and progreſs of a Vineyard; and eſpecially in a country of which a part is within the vinous latitude[a].

Vineyards

[a] The vinous latitude is ſaid to extend between the 25th and 51ſt degree in the Northern Hemiſphere.

It is found, by experience, that all Vineyards in *Germany*, ſituated within the 51ſt degree, are cultivated with great advantage; but beyond that limit their ſucceſs is dubious.

I muſt here beg to remark, that the climate is various in different countries, even under the ſame parallel of latitude. Alſo, that the ſeaſons are much more favourable in Germany, Pruſſia, Poland, Hungary, &c. than under the ſame latitude in the parallel parts of America. And, moreover, that the ſeaſons in Europe were much colder formerly than at the preſent. A Celebrated Author has thus accounted for this phænomenon.

"Some ingenious writers * have ſuſpected that Europe was much colder formerly than it is at preſent; and the moſt ancient deſcriptions of the climate of Germany tend exceedingly to confirm their theory. The general

* *In particular, Mr. Hume, the Abbé du Bos, and M. Pellontier, Hiſt. des Celtes*, tom. i.

Vineyards are of very ancient date, and wine is allowed to be the firſt fermented liquor known to man [b].

It

" general complaints of intenſe froſt and eternal winter, are, perhaps, little " to be regarded, ſince we have no method of reducing to the accurate " ſtandard of the thermometer, the feelings or the expreſſions of an orator " born in the happier regions of Greece or Aſia. But I ſhall ſelect two " ſtrong and inconteſtable proofs of a leſs equivocal nature.

" 1ſt. The great rivers which covered the Roman provinces, the Rhine and the " Danube, were frequently frozen over, and capable of ſupporting the " moſt enormous weights. The Barbarians, who often choſe that ſevere " ſeaſon for their inroads, tranſported, without apprehenſion or danger, " their numerous armies, their cavalry, and their heavy waggons, over a vaſt " and ſolid bridge of ice †. Modern ages have not preſented an inſtance of " a like phænomenon.

" 2d. The rein deer, that uſeful animal, from whom the ſavage of the North " derives the beſt comforts of his dreary life, is of a conſtitution that ſupports, " and even requires the moſt intenſe cold. He is found on the rock of " Spitzberg, within ten degrees of the Pole. He ſeems to delight in the " ſnows of *Lapland* and *Siberia*; but at preſent he cannot ſubſiſt, much " leſs multiply, in any country to the South of the Baltic ‡. In the time " of

† *Diodorus Siculus*, lib. v. p. 349. *Edit. Weſſel.* *Herodian*, lib. vi. p. 221. *Jornandes*, chap. 55. *On the banks of the Danube, the wine, when brought to table, was frequently frozen into great lumps*, fruſta vini. *Ovid Epiſt. ex Ponto*, lib. iv. 7, 9, 10. *Virgil Georgic.* lib. iii. 355. *The fact is confirmed by a ſoldier and a philoſopher, who had experienced the intenſe cold of Thrace. See Xenophon, Anabaſis*, lib. vii. p. 560. *Edit. Hutchinſon.*

‡ *Buffon Hiſtoire Naturelle*, tom. xii. p. 79, 116.

It has been much diſputed of late whether the various places in the different counties in England, which ſtill retain the

" of Cæſar, the rein deer, as well as the elk, and the wild bull, was a native " of the Hercynian foreſt, which then overſhadowed a great part of *Ger-* " *many* and *Poland* *. The modern improvements ſufficiently explain the " cauſes of the diminution of the cold. Theſe immenſe woods have been " gradually cleared, which intercepted from the earth the rays of the ſun.† " The moraſſes have been drained, and, in proportion as the ſoil has been " cultivated, the air has become more temperate. *Canada*, at this day, is " an exact picture of ancient Germany; although ſituated in the ſame pa- " rallel with the fineſt provinces of France and England, that country ex- " periences the moſt rigorous cold. The rein deer are very numerous, the " ground is covered with deep and laſting ſnow, and the great river of *St.* " *Lawrence* is regularly frozen, in a ſeaſon, when the waters of the *Seine* " and the *Thames* are perfectly free from ice.‡ §

[b] " From the moſt early ages, wine is mentioned by the *Hiſtorians* and Poets, and " ſeems to be almoſt coeval with the firſt productions from vegetables: The " grapes became, at firſt, a uſeful part of their aliment, and the recent ex- " preſſed juices a cooling drink. Theſe, by a ſpontaneous fermentation, " ſoon

* *Cæſar de Bell, Gallic*, vi. 23. *The moſt inquiſitive of the Germans were ignorant of its utmoſt limits, although ſome of them had travelled in it more than ſixty days journey.*

† *Cluverius (Germania Antiqua*, lib. iii. chap. 47.) *inveſtigates the ſmall and ſcattered remains of the Hercynian wood.*

‡ *Charlevoix Hiſtoire du Canada.*

§ *Hiſtory of the Decline and Fall of the Roman Empire*, by Edward Gibbon, Eſq; vol. i. chap. ix. p. 218.

name of Vineyards, were plantations of Vines for the purpoſe of making wine.[c]

As

" ſoon acquiring a vinous quality, ſupplied them with a more grateful liquor, " which ſtrengthened and exhilerated their ſpirits after labour.

" The *Indians*, in the ſame manner, diſcovered ſimilar virtues in the *Palm*- " trees; they firſt made inciſions in the bark, with a view of drinking the " cooling liquor which diſtilled from them; but ſoon found that, by being " kept in veſſels, it acquired different and more agreeable qualities.

" In theſe times they certainly drank their wine recent and pure, ſoon after " the fermentation had ceaſed; but obſerving, that by acquiring a greater " age, it became more generous, they, with art and induſtry, endeavoured " to prepare and preſerve it for *future* uſe. This, probably, was the firſt " origin and progreſs of wine: It is mentioned that *Noah* firſt planted the " Vine; and that wine was offered with *bread* by the *Patriarch Melchiſe*- " *dech*, amongſt his *firſt fruits*, as a well-pleaſing *ſacrifice* to *God*.

" The *Poets*, who were inſpired by it, celebrate its praiſe; and not ſatisfied " with allowing it to be a moſt uſeful *human* invention, aſcribe it to the " *Gods*, to *Oſyris*, *Saturn*, and *Bacchus*, and call it their ambroſial nectar.

" The greateſt *Philoſophers*, *Legiſlators*, and *Phyſicians*, give it due praiſes, " when temperately taken; and *Plato*, who ſtrictly reſtrains the uſe of it, " and ſeverely cenſures the exceſs, ſays, that nothing more excellent or va- " luable than *wine* was ever granted by *God* to mankind."

Barry's Obſervations, &c. *on Wines*, p. 27.

[c] The debate aroſe from a Memoir of the Rev. Samuel Pegge, in the firſt volume of the *Archæologia*, of the Society of Antiquaries, London, on the introduction, progreſs, ſtate, and condition of the Vine in Britain. The Honourable Daines Barrington, in his *Obſervations on the more ancient Statutes*, p. 207, was pleaſed to combat Mr. Pegge's notions, and to declare, that he takes the Engliſh

Vineyards

As I have not the leaſt pretenſion to antiquarian knowledge, it would ill become me to endeavour to enter into this debate; and,

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Vineyards 'either to have been *orchards*, with Sir Robert Atkins, or rather, according to his own particular ſentiments, *currant-gardens*: In ſhort, any thing elſe but true and proper Vineyards.' To theſe remarks of Mr. Barrington, Mr. Pegge replied in a ſecond Memoir, in the third volume of the *Archæologia*, with which Mr. Barrington not being ſatisfied, he gave in a paper on the ſubject in the ſame volume, to conſider and anſwer Mr. Pegge's obſervations, and ſo the matter then reſted. Mr. Pegge, however, has ſince informed me, by Letter, that Dr. *Stukeley*, in *Itin.* p. 48, ſpeaks of a *Vineyard* near Chipping-Norton, *William Thorne*, col. 2036, of another in *Kent*, and that *Madox*, in his *Hiſt. of the Exchequer*, 1 p. 364, writes, that the Sheriffs of *Northamptonſhire* and *Leiceſterſhire* were allowed, in their account, 'for the livery of the King's *Vine-dreſſer* at *Rockingham*, and for neceſſaries for the Vineyard.' He further adds, that the late Dean of *Ely*, Dr. Thomas, imparted to him the following extracts from the Archieves of that church:

	£.	s.	d.
Exitus Vineti - - - - - - - - - - - -	2	15	3¼
Ditto, Vineæ - - - - - - - - - - - -	10	12	2½
Ten buſhels of Grapes from the Vineyard - -	0	7	6
Seven Dolia Muſti from the Vineyard, 12 Ed. II.	15	1	0
Wine ſold for - - - - - - - - - - - -	1	12	0
Verjuice - - - - - - - - - - - - -	1	7	0
One Dolium, and one pipe filled with new wine, and ſuppoſed at Ely			
For wine out of this Vineyard - - - - - -	1	2	2
For verjuice from thence - - - - - - -	0	16	0
No wine, but verjuice made 9 Ed. IV.			

It appears plainly, ſays Mr. Pegge, from theſe extracts, firſt, that in the latitude of *Ely* grapes would ſometimes ripen, and the convent made wine of them, and

and, indeed, it may ſeem ſufficient to obſerve, that good wines are conſtantly made in a part of Germany, which is under the ſame parallel of latitude with many counties in the Southern part of England. And that where the ſituation and ſoil are proper for Vines, the lands cannot poſſibly be more beneficially employed than by being converted into Vineyards.[d]

In

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and ſometimes not, and then they converted them into verjuice, juſt as it is in Derbyſhire, where grapes, growing on the South wall of an houſe, will, in a hot ſummer, come to maturity and be very good; but in a wet or cold ſeaſon, will never be fit for the table. Secondly, That theſe paſſages, all taken together, it is impoſſible to underſtand them of any thing elſe, than a true or proper Vineyard, as they never can be interpreted either of an *apple-orchard* or a *currant-garden.*

Thoſe who wiſh to go further into this matter, may conſult the Gentleman's Magazine, 1775, p. 513. and 1786, p. 918; alſo Archœologia Soc. Antiq. London, 5. p. 309.

[d] "I was particularly attentive to inquire of him * what were the uſual produce "of a good acre of Vines, and the account he gave was this: The Vine- "yard of twenty-ſix acres, of which he had the care, yielded five years ago "a produce per acre, of four pieces, each piece twenty-eight gallons, which "ſold as follows:

	£.	s.	d.
Two pieces at eleven guineas † - - - - - -	23	2	0
One piece at 8 l. - - - - - - - - - - -	8	0	0
One piece at 4 l. 10 s. - - - - - - - - - -	4	10	0
	35	12	0

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* *The Vigneron.*——† *This is* 8 *s. a gallon.*

The

In this purſuit there are four things which ought materially to be conſidered, viz.

1ſt. The ſituation—2dly. The ſoil—3dly. The kinds of Vines which are the moſt fitting to be planted—and 4thly. The mode of their management.

Firſt. An elevated ſituation, where there is a gentle declivity to the South or South Eaſt, is eſteemed preferable to low grounds, which are generally ſubject to damps and ſpring froſts, even at times when the adjoining high grounds are entirely free from both.

A Vineyard ſhould be well ſheltered to the North, as alſo to the N. W. and N. E. In an hilly country there are generally many

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The next year's produce was,

	£.	s.	d.
Two pieces at 12 l.	24	0	0
Two pieces at 9 l.	18	0	0
One piece	5	0	0
	47	0	0

" In general, the produce varies between 30 and 50 l. In ſome favourable ſpots, " highly managed, and in a good ſeaſon, a produce of from 60 to 70 l. an " acre has been known.

" As to the expences, they are not ſo eaſily calculated; for I could not get " him to be explicit, nor did I clearly underſtand all his terms."

Travels through France and Spain in the years 1770 *and* 1771, *By Joſeph Marſhall, Eſq*; vol. 4. p. 92.

many favourable ſpots, where nature has given important advantages, and theſe ſhould be ſtill further improved by art.

Plantations of foreſt-trees, judiciouſly formed, would contribute much to give warmth and ſhelter: But theſe ſhould not be placed too near the Vineyard, ſo as to confine the air, which would prove very prejudicial.

We are informed that, in wine countries, Vineyards are not only confined to gentle declivities, but that they often are formed on ſlopes on the ſides of hills and rocks, which are ſometimes ſo ſteep as even to border upon precipices: And that Vineyards, thus ſituated, produce grapes uncommonly rich, yielding wines of the moſt excellent quality.[e]

I am informed too, that the hills in the counties bordering upon the Engliſh channel have, in general, declivities tending to

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" [e] In the neighbourhood of *Piera* there is an eminent hill, the Southern ſide " of which is ſo ſteep, that people are obliged to lay hold of ropes fixed to " ſtrong poles, in order to keep themſelves upright, while they ſtalk from " Vine to Vine, to pluck the grapes that cover all that ſide. Should they " truſt themſelves there without the help of thoſe ropes, the leaſt remiſſneſs " of attention in ſtepping might cauſe a very miſchievous tumble. I won- " der how people could take it into their heads to plant Vines on ſo incon- " venient a ſpot: But the trouble of the vintagers is very well repaid by " the goodneſs of thoſe grapes, which yield the moſt excellent wine that is " drank in Catalonia."

Baretti's Travels, vol. 4. p. 72.

to the South :[f] A circumſtance of the greateſt importance reſpecting the plantation of Vineyards.

Secondly. As I have, in the former part of this work, taken notice of the ſoil proper for Vines, it may ſeem unneceſſary here to enlarge upon that head. I ſhall, however, juſt obſerve, that the Vine delights in ſuch gravelly and rocky ſoils as we frequently find on the ſides of ſteep hills and rocks; and that it has ſometimes been known to flouriſh among mere ſtones and gravel.[g]

Hence

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[f] It is a general and received opinion, that this iſland was originally united with, and formed a part of, the continent.

The ſimilarity of the different ſtrata, which, it is ſaid, form the land on both ſides of the Britiſh channel, ſerves to confirm us in this belief.

Moreover, on the South coaſt of England the rocks have a Southern aſpect; but, on the oppoſite coaſt of France, I am told they incline to the North. From thence it is reaſonable to conclude, that at the deluge the horizontal ſtratum (or Iſthmus) was broken between theſe countries, and the bed or middle of the channel falling loweſt, the ſea naturally flowed into it, and formed what is now called the *Britiſh Channel.*

[g] "Concerning the ſoil proper for Vines, I ſhall give the firſt hint from that "ingenious and candid piece of Mr. Lawrence's, where, with ſo much "good reaſon, he tells us, that he cannot eaſily be brought to think that "any ſoil or ſituation can be too dry for the roots of the *Vine*, after having "ſeen at *Barnwall*, near *Oundle*, in *Northamptonſhire*, a flouriſhing *Vine* "grow from between the joints of an old caſtle wall, near twenty feet high "from

Hence it will appear, that the introduction of Vineyards into this country would have no bad effect reſpecting agriculture, becauſe all ſtrong and deep lands, which are beſt adapted for tillage, are the moſt unſuitable for Vines.

Permit me to add, that, beſides gentle declivities and light ſoils, ſuch as are proper for Vineyards,[h] Vines grow, in ſituations

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" from the ground, which he was told produced admirable *grapes* when it " was well managed.

New Improvements of Planting and Gardening, By Richard Bradley, F. R. S. p. 187.

To the above, the following account from a Celebrated Author may be added :

" At Malaga, the great mart of wine and fruit, the North and Eaſt approach " is hemmed in by mountains ; theſe preſent, from the town, a moſt barren " and unpromiſing proſpect, their tops being immenſely high.—It is in " thoſe iron-looking mountains, and among theſe peeled (i. e. bald) rocks, " *where there is no appearance of ſoil or earth*, that grow annually ſo many " thouſand ton of exquiſite wine, and aſtoniſhing quantity of Moſcatal " raiſins."

Carter's Journey from Gibraltar to Malaga, II. p. 387.

[h] Although it be not difficult to determine what ſoil is properly adapted to promote the growth of the Vine from its external appearance, yet there is ſomething in reſpect of its *nature*, ſo deeply hidden from us and unknown, as not to be developed but by the quality of the wine.

I have been informed, that the rich *Hungarian* wine, ſo univerſally eſteemed for its peculiar flavour, is made only in a very ſmall diſtrict near *Tokay*; and that the adjoining Vineyards, where both ſoil and ſituation are apparently the ſame, and

ſituations and ſoils, where the lands could hardly be rendered profitable any other way. And thus, though the Vines would not grow robuſt on ſteeps of poor gravelly and rocky ſoils, ſtill they would be more prolific than Vines planted on rich lands, and the fruit would be greatly preferable.

Thirdly. The ſucceſs of a Vineyard in this country would moſt eſſentially depend on the kind of Vines there propagated.

I believe it has been a prevailing, but ſurely an erroneous, notion, that the ſweet early kinds of grapes are the beſt to plant for the purpoſe of making wine in this country. And that moſt or all of the modern trials have been made from Vines brought from *France.*

Among the abundant variety of grapes [i], I doubt not but there are peculiar ſorts, which are by nature ſingularly adapted to make wines in different climates.

Thus, the ſorts of grapes propagated in the *Madeira* and *Canary* iſlands, might not be found, if tried, to make good wines in *France.*

and although planted with the ſame kind of grape, produce a wine not only much inferior in its quality and excellence, but alſo very diſſimilar in its colour and appearance.

[i] Mr. *Swinburne* obſerves there are forty ſorts of grapes in the dioceſe of *Syracuſe.*

Swinburne's Travels in Sicily, II. p. 342.

Hence, as the Southern part of this iſland is almoſt on the verge of the vinous latitude, it ſhould ſeem reaſonable to ſuppoſe, that there would be the greateſt probability of ſucceſs from thoſe kinds of grapes which have been known to thrive and proſper beſt in the moſt Northern latitudes. I ſhould therefore recommend the kinds of Vines cultivated in *Germany*, and particularly the ſort producing the grapes of which the *Rheniſh* wine is made, in preference to any kind cultivated in *France*.

I have remarked above, that the early ſweet kinds of grapes are improper for making wine in this country: My reaſon is, that though ſuch grapes yield a ſweet juice, it is not calculated to undergo fermentation.

It is found, by experience, that good-bodied, or generous wines, can be made from grapes of an auſtere taſte, and that too, even before they are quite arrived at a ſtate of maturity: But then wine, from ſuch crude grapes, requires to be kept to a good age.[k]

The

[k] "But that we may anſwer every objection that may be made againſt planting "*Vineyards* in *England*, give me leave to recite what I have heard relating "to making of liquors with unripe and ſour fruits. In *Devonſhire* a Gen- "tleman made a veſſel of *verjuice*, of *crab*, or wilding-apples, which being "placed in his cellar among other liquors, was not uſed till about three or "four years afterwards, and was then found to be ſo palatable and exceeding "pleaſant, that he now preſers the liquor made of ſuch wilding ſour fruit "(after

The caſe is ſimilar with reſpect to apples. It is well known that the ſweet kinds of apples, which ripen in the ſummer months, are very unfit for the making of cyder. And that the nobleſt cyder (ſuch as the *Styre* and *Cockagee)* is made from apples not much better than wildings.

Fourthly. I ſhall not undertake here to give general directions for the management of a Vineyard; the method of raiſing Vine-plants, and the common proceſs of a Vineyard, as practiſed abroad, having been already delivered to the public by much abler pens. However, I ſhall beg leave to offer a few ideas on the ſubject, and particularly on the mode of training the Vines.

As even the moſt Southern parts of this iſland are (as I have obſerved) but nearly on the verge of the vinous latitude, every poſſible advantage ſhould be conſulted reſpecting the formation and management of a Vineyard here.

" (after it has had time to digeſt) to any *cyder* of that country: So I have " known *verjuice* made of half-ripe grapes, that after two or three years " keeping in a veſſel, has become delicate wine; and the *Rheniſh* wines, when " they are newly made, are ſo ſour, that they are not fit to drink; but after " ſeveral years ſtanding, afford us that incomparable liquor which is called " *Old Hock*; and, on the contrary, ſweeter liquors are apt turn ſour by " keeping."

New Improvements of Planting and Gardening, by Richard Bradley, F. R. S. p. 177.

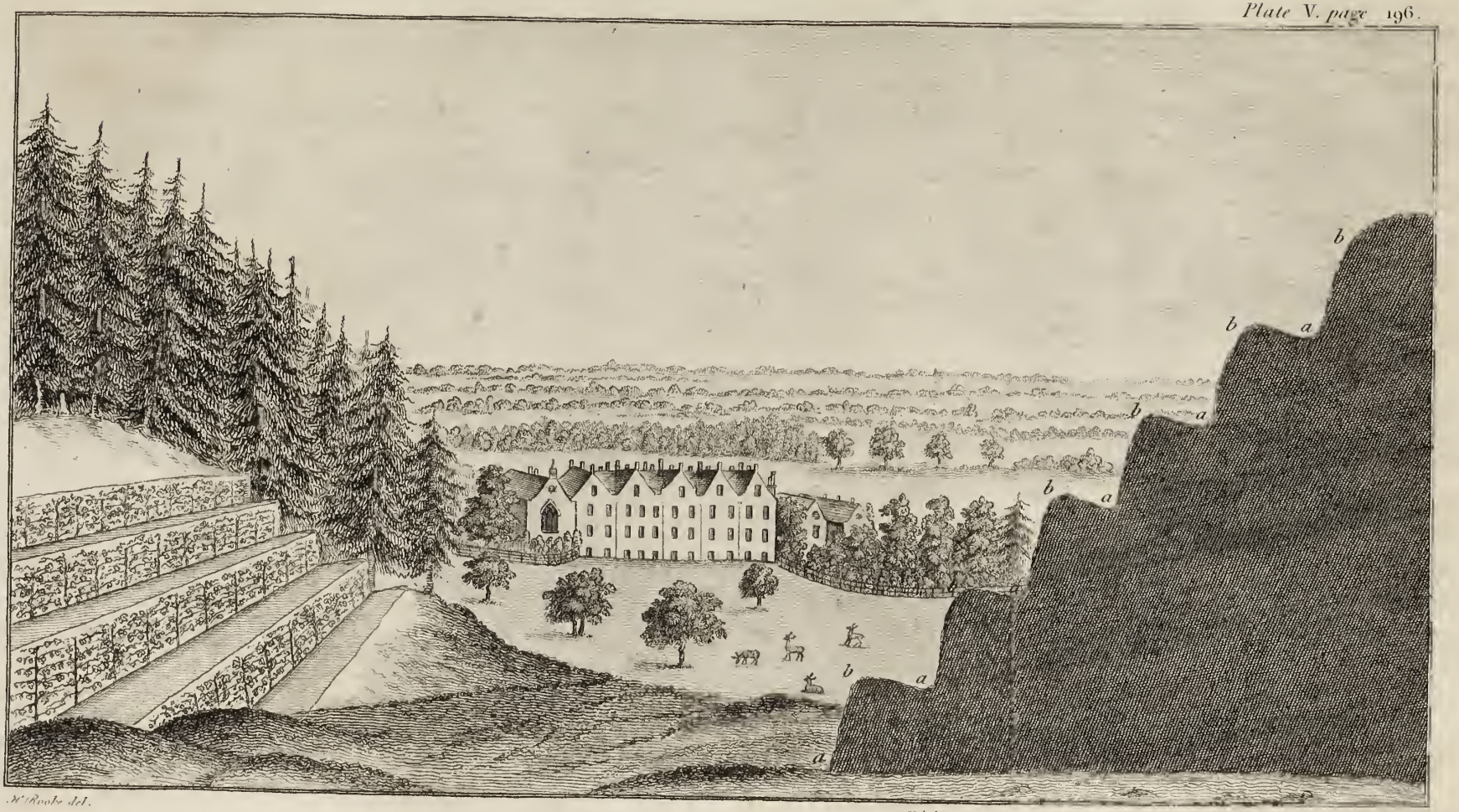
The Vineyards abroad are formed by planting the Vines in rows, and by training them in a perpendicular direction. But in this country I ſhould greatly prefer the mode of training the Vines in a lateral or horizontal form, ſimilar to the method practiſed in *Holland*, with Vines in frames, as I have already hinted, p. 99. and p. 128. There would be little difficulty in this method, as the Vines would readily be trained along ſmall poles, not thicker than thoſe uſed for hops: Theſe ſhould be fixed nearly parallel to the ground. Vines thus trained would derive, I apprehend, many advantages, not only by means of warmth and ſhelter, but that they would moſt eaſily alſo be protected from ſpring froſts, by applying the boughs of trees, particularly Evergreens. The grapes alſo, let me obſerve, would be greatly benefited by the reflection of the ſoil underneath.

When Vines are intended to be planted on the ſteeps of hills, and on the ſides of rocks, the ground ſhould be prepared and formed in the manner of ſteps, as in plate v.

The Vines ſhould be planted near the angle *a*, and trained by ſtakes upwards, from *a* towards *b*.

It will be abſolutely neceſſary that the ground ſhould be lower at the angular point *a*, of every ſtep, than at *b*; for without this care, the Vine-plants would loſe the advantage of ſuch rains as fall haſtily and perpendicularly.

It



M.r Rooke del.

Height from a to b eight feet. Breadth from b to a six feet.

Basire Sc.

The Section of a Hill for the Growth of Vines in England.

Published January 1.st 1790

by Wm Speechly, as the Act directs.

It is eaſy to conceive what advantage Vines would gain from a ſituation thus planned, ſince the back from *a* to *b* would be nearly equal to a wall.

The expence attending the formation of the ground cannot be very conſiderable. The work ſhould be begun at the top, and the ſoil taken out ſhould be thrown down the hill.

I ſhould have obſerved, that it would be further beneficial to have a little good ſoil put in at the angles before the Vines are planted: And alſo, that all hills of a Southern aſpect, and compoſed of either ſlate, gravel, ſcaly rock, or limeſtone, are very proper to be planted with Vines.

In a diſſertation on the growth of wine in England, by F. X. VISPRE, printed at Bath 1786, the ingenious author informs the public, "That in September 1782, he hired a piece of ground at *Wimbledon*; that in March 1783, he planted it with Vines; that his intention was then to train the ſhoots of them (as he has ſince done at *Chelſea*) upon the ground in their natural poſitions, like the Vines of melons and cucumbers; and that he hopes to make good wine with well-ripened grapes, almoſt every year."

Mr. *Viſpré* does not arrogantly aſſume the invention of this method to himſelf, but very candidly acknowledges, that he purſued and practiſed it in conſequence of the following hint from

from that great and ſagacious philoſopher Lord Chancellor BACON, who ſays, "The lowneſs of the fruit-boughs makes the fruit greater, and cauſes it to ripen better; for we always ſee in apricots, peaches, and mello-cottons upon a wall, the largeſt fruit is towards the bottom; and in France, the grapes that make the wine grow upon low Vines bound to ſmall ſtakes, while the raiſed Vines in arbours make verjuice."

He adds, "It is reported, that in ſome places Vines are ſuffered to grow like herbs, ſpreading upon the ground, and the grapes of theſe Vines are very large; it were proper to try whether plants uſually ſuſtained by props, will not bear large leaves and fruit, if laid along the ground, as hops, ivy, woodbine, &c."

THIS laſt citation, ſays Mr. Viſpré, from the works of the Chancellor, ſhews very clearly that the Rev. Mr. LE BROCQ is under a miſtake; when, in his deſcription of the methods of planting and training all kinds of fruit-trees, Vines, &c. (for which his Majeſty's Letters Patent have been granted to him) he ſays, p. 4, "I ſincerely requeſt they will accompany me in my illuſtration of my new methods of horticulture and fructification."

THIS method, according to the deſcription, is, to train all ſorts of fruit-trees or Vines upon or near the ground. Says Mr. Viſpré, "I do not know whether the above method, ſug-

"geſted

" geſted by Lord Chancellor BACON, was tried by any perſon " before myſelf; but I believe Mr. LE BROCQ leſs intitled to " call it his, than I am to call it mine, ſince I have practiſed " it with ſucceſs theſe two laſt ſummers[1]. I never dreamt of " monopolizing that method; I was ſufficiently ſatisfied with " the proſpect of being the reſtorer of Vineyards in this country: " But that I might not loſe the honour of being deemed ſuch, " in May 1784, I preſented to the ſociety for the encourage- " ment of arts, &c. a plan, adapted to this climate, for culti- " vating Vineyards; and afterwards left open my Vineyard to " the inſpection of the curious.

" THE laying the plants in the ground every year, and train- " ing the ſhoots upon it, was in that plan the firſt article. At " the end of the year I gave an account of the firſt experiment " to Mr. More, ſecretary to the ſociety.

" I have done the ſame lately of the ſecond year. This laſt " ſeaſon having proved more favourable than the preceding " one, and the ſhoots of the Vines having been laid for the " ſecond time, the grapes were conſiderably larger than thoſe " of the ſame kind growing on a South wall, and ripened as I " ſaid before."

Mr.

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[1] Fruit-trees of various ſorts have been trained in the above deſcribed horizontal form in the gardens at Welbeck more than fourteen years.

Mr. *Viſpré* produces many inſtances of wine having been made in various parts of England; ſome of which I ſhall here beg leave to tranſcribe.

" Mr. BRADLEY, Profeſſor of Botany in Cambridge, in his " *Dictionarium Botanicum* Art. *Vitis*, ſays, " I cannot help " mentioning how our poor ſoils might be improved by " making of Vineyards; a good inſtance of which is at Mr. " JOHN WARNER's, a Gentleman of Rotherhithe, near South- " wark, who makes good wine from his own Vineyards."

" STEPHEN SWITZER, in vol. ii. p. 266, of his *Ichnogra-* " *phia Ruſtica*, publiſhed in 1742, ſays, That Vineyards may " be ſo cultivated in England, as to produce large quantities " of grapes, and thoſe ſo well ripened, as to afford a good and " ſubſtantial vinous juice, needs no demonſtration; when in " ſeveral parts of *Somerſetſhire* there are, at this time, flouriſh- " ing Vineyards, and the Vineyard of the late Sir WILLIAM " BASSET, in that county, has annually produced ſome " hogſheads of good-bodied and palatable wine, which I " have been credibly informed by Gentlemen who have drank " conſiderable quantities of it with the greateſt ſatisfaction."

" BARTHOLOMEW ROCQUE, a gardener at Walham Green, " made wine for thirty years from a Vineyard he had planted " in a common field garden; and although the ground was flat, " the wine was as good as that of *Orleans* or Auxerre, in the " judgment of ſome acquaintance of mine ſtill alive".

" Dr.

"Dr. HALES, in vol. iv. of his Complete Treatiſe on Practical Huſbandry, written equally for the ſervice of the farmer and country Gentleman, ſays, p. 2. "This we can ſay with "certainty, that very good wine may be made in England, and "that in many parts of the kingdom there are pieces of land "which may be turned to ſome account this way, at a ſmall "expence; and others, which will anſwer to a more charge-"able preparation, in ſuch a manner as to make the farmer "very happy."

"And again, he ſays in p. 11, "I have drank with the di-"ſtinguiſhed and eminent Dr. SHAW, wines made under his "own care, from a little Vineyard behind his garden at Ken-"ſington, which equalled many of the lighter wines of France; "and while due care was taken of the Vineyard at Hammer-"ſmith, a great deal of very good was obtained there for ſale, "yet neither of theſe were favourable ſpots."

"The BATH Vineyards might ſerve as a better example for "the huſbandman, who ſhould conſider only profit from "them; the juice of the grapes was ſold there as it was preſſed "from the fruit, and the owners had no further care than "managing the ground and gathering.

"In one of theſe inſtances there was excellent wine made "for the table; in the other, a profitable kind for ſale; and "in the third, no more trouble was allowed to this than the

" farmer uſually afforded to his ſlighter products; yet they all " anſwered, when well conducted. The two laſt might have " been better managed, and their profit rendered three-fold. " *We ſpeak of what we know with certainty, having ſeen and ex-* " *amined them all.*"

" I have known," ſays Mr. Hanbury, " Good wine made of " grapes growing in England, and have drank our *Burgundy* " no way inferior, as my taſte could find out, to that noted " wine which we have conſtantly imported from that country. " Doubtleſs, therefore, there are ſome ſoils and ſituations that " will ſuit Vines, and cauſe their fruit to ripen properly here. " When a perſon is poſſeſſed of ſuch a ſpot, then may he pro- " ceed to plant it as a Vineyard, otherwiſe he will find his " labour and expence thrown away."

Complete Body of Gardening, vol. ii. p. 783.

As modern inſtances impreſs the mind more forcibly than ſuch as are more ancient, I have reſerved the account of the ſucceſs of the Vineyard at *Pain's-Hill*, for my laſt and moſt convincing illuſtration. It is thus elegantly introduced by Sir *Edward Barry*, in his celebrated Treatiſe on wines. p. 468.

" From the hiſtory of the ancient and modern Wines, we may " be capable of forming a more true judgment of the various " nature and qualities of wines, which, in the general, are chiefly " owing to the *climate* and *ſoil*. It is very remarkable that the

" grapes

" grapes of all Vines, planted within the *fifty-firſt degree* of the " *Northern latitude*, acquire ſuch a degree of ſtrength, as renders " them fit for producing good wine, in which the *terrene* and " *ſaline* principles prevail, though they are more refined and cor- " rected as they advance to maturity; but as the climate ad- " vances more to the South, they acquire more ſtrength, and the " *oleaginous* and *ſpirituous* principles prevail, and in any conſi- " derable *quantity* cannot be *ſalutary* without being diluted with " water; on which account the wines produced in temperately " warm climates, where the principles are more *equally blended* " and *united*, are more light, and though generous, more ſalutary, " and agreeably adapted to promote ſocial happineſs, than thoſe " produced in either *extreme:* Such are particularly the *French*, " Hungarian, Italian, and ſome of the *Spaniſh* and *German* wines.

" It is a juſt obſervation, that one half of *Germany*, which is " to the North of the vinous latitude, is entirely deſtitute of any " good wine, while the other half abounds with fertile Vineyards, " and a variety of good wines; and likewiſe ſhews, that a very " moderate addition to the warmth of the climate is ſufficient to " produce excellent wines; in which the *ſoil* principally, with " other circumſtances, has at leaſt an equal influence with the " warmth of the climate, and in ſome inſtances a greater, in " giving the peculiar, grateful qualities, for which ſome wines " are diſtinguiſhed. Of this ſeveral inſtances are known, where " not only the ſame climate, but in places very near adjacent, " from the ſame Vines, and in the ſame ſituation, and aſpect to

" the ſun, very different wines are produced, which can be
" only owing to the *ſoil*.

" From hence it is evident, that good wines may be made in
" ſeveral parts of *England*, which are within this vinous latitude.

" The ingenious Mr. Miller ſhews, from ancient records, that
" in many parts of *England*, and particularly near *abbeys* and
" *monaſteries*, good wines were made, and that theſe places are
" ſtill diſtinguiſhed with the name of Vineyards; but how they
" were rooted up and neglected, there are no clear accounts left.
" He likewiſe obſerves, that an obſtinate prejudice has prevailed
" againſt making any farther trials, from ſome improper ones
" made near *London*, where the *ſoil* is not *friendly* to the *Vines*,
" and where the wines were ſo injudiciouſly made, that under the
" ſame diſadvantages neither thoſe of *Italy* or *France* would have
" ſucceeded. He therefore, with his uſual modeſty and candour,
" gives his opinion, founded on ſome trials, which he had ſeen
" made, and the inſtructions he had received from ſeveral perſons
" abroad, who cultivated Vineyards for their own uſe, and that
" of their friends, and who have been very exact in obſerving
" the ſeveral methods of practice among the Vignerons of thoſe
" countries; from whence he hopes, that the prejudice which
" ſtill prevails againſt any project of this kind might be removed,
" or at leaſt ſuſpended, until ſome farther trials ſhall have been
" more judiciouſly made, which he thence proceeds to direct.
" But had he been acquainted with the ſucceſs which attended

" the

" the Vineyards of my ingenious friend, the Hon. *Charles Ha-*
" *milton*, who has been long diſtinguiſhed for his peculiar elegant
" taſte, he would have ſpoken with more certainty. To him I
" am particularly obliged for the following exact deſcription
" which he has, at my requeſt, given of the rules he had pur-
" ſued, and which he has given me leave to publiſh."

The Vineyard at Pain's-Hill is ſituated on the South ſide of a gentle hill, the ſoil a gravelly ſand; it is planted entirely with two ſorts of Burgundy *grapes, the Auvernat, which is the moſt delicate, but the tendereſt; and the Miller grape, commonly called the* Black Cluſter, *which is more hardy. The firſt year I attempted to make red wine in the uſual way, by treading the grapes, then letting them ferment in a vat, till all the huſks and impurities formed a thick cruſt at the top, the boiling ceaſed, and the clear wine was drawn off from the bottom.*

This eſſay did not anſwer; the wine was ſo very harſh and auſtere, that I deſpaired of ever making red wine fit to drink; but through that harſhneſs I perceived a flavour ſomething like that of ſome ſmall French *white wines, which made me hope I ſhould ſucceed better with white wine. That experiment ſucceeded far beyond my moſt ſanguine expectations; for the very firſt year I made white wine, it nearly reſembled the flavour of* Champaign; *and in two or three years more, as the Vines grew ſtronger, to my great amazement my wine had a finer flavour than the beſt*

Champaign

Champaign *I ever taſted. The firſt running was as clear as ſpirits; the ſecond running was* œil de Perdrix, *and both of them ſparkled and creamed in the glaſs like* Champaign. *It would be endleſs to mention how many good judges of wine were deceived by my wine, and thought it ſuperior to any* Champaign *they ever drank; but ſuch is the prejudice of moſt people againſt any thing of* Engliſh *growth, I generally found it moſt prudent not to declare where it grew, till after they had paſſed their verdict upon it. The ſureſt proof I can give of its excellence is, that I have ſold it to wine-merchants for fifty guineas a hogſhead; and one wine-merchant, to whom I ſold five hundred pounds worth at one time, aſſured me, he ſold ſome of the beſt of it from* 7 *s.* 6 *d. to* 10 *s.* 6 *d. per bottle.*

After many years experience, the beſt method I found of making and managing it was this: I let the grapes hang till they had got all the maturity the ſeaſon would give them; then they were carefully cut off with ſciſſors, and brought home to the wine-barn, in ſmall quantities, to prevent their heating, or preſſing one another; then they were all picked off the ſtalks, and all the mouldy, or green ones, were diſcarded, before they were put upon the preſs; where they were all preſſed in a few hours after they were gathered, much would run from them, before the preſs ſqueezed them from their own weight one upon another. This running was as clear as water, and ſweet as ſyrup, and all this of the firſt preſſing, and part of the ſecond continued white; the other preſſings grew reddiſh, and were not mixed with the beſt.

beſt. As faſt as the wine ran from the preſs into a large receiver, it was put into the hogſheads, and cloſely bunged up. In a few hours one would hear the fermentation begin, which would ſoon burſt the caſks, if not guarded againſt, by hooping them ſtrongly with iron, and ſecuring them in ſtrong wooden frames, and the heads with wedges. In the height of fermentation, I have frequently ſeen the wine ouzing through the pores of the ſtaves.

Theſe hogſheads were left all the depth of winter in the cool barn, to reap the benefit of the froſts, when the fermentation was over, which was eaſily diſcovered by the ceſſation of noiſe and ouzing; but to be more certain, by pegging the caſk, when it would be quite clear, then it was racked off into clean hogſheads, and carried to the vaults, before any warmth of weather could raiſe a ſecond fermentation. In March, *the hogſheads were examined; if any were not quite fine, they were fined down with common fiſh glue, in the uſual manner; thoſe that were fine of themſelves were not fined down, and all were bottled about the end of March; and in about ſix weeks more would be in perfect order for drinking, and would be in their prime for above one year; but the ſecond year the flavour and ſweetneſs would abate, and would gradually decline, till at laſt it loſt all flavour and ſweetneſs; and ſome that I kept ſixteen years became ſo like* Old Hock, *that it might paſs for ſuch to one who was not a perfect connoiſſeur.*

The

The only art I ever uſed to it, was putting three pounds of white ſugar candy to ſome of the hogſheads, when the wine was firſt tunned from the preſs, in order to conform to a rage that prevailed, to drink none but very ſweet Champaign.

I am convinced much good wine might be made in many parts of the South of England. Many parts are South of Pain's-Hill; many ſoils may be yet fitter for it, and many ſituations muſt be ſo; for mine was much expoſed to the South-Weſt wind, (the worſt of all for Vines) and the declivity was rather too ſteep; yet with theſe diſadvantages it ſucceeded many years. Indeed, the uncertainty of our climate is againſt it, and many fine crops have been ſpoiled by May *froſts and wet ſummers; but one good year balances many diſappointments.*

" There are not wanting in this country ſeveral Gentlemen of " fortune, who make the improvements in agriculture their " favourite ſtudy and practice. To ſuch, no experiments could " give a more rational and elegant amuſement than planting and " cultivating a ſmall Vineyard in a favourable ſituation: Nor " could the fruits of any other plantation afford that chearful " pleaſure, which they would receive, from drinking fine wines " of their own production. The proſpect of ſome ſucceſs, even " from the firſt trial, ſeems almoſt certain, if conducted by the " rules given by Mr. *Hamilton* and Miller, with the neceſſary " aſſiſtance of a good Vigneron, well verſed in the mechanic

" operations

" operations of this proceſs. Neither is it improbable, but that " in ſome time ſeveral Vineyards may be propagated, on ac- " count of the *profit* ariſing from them, and this country ſup- " plied with native wines, very ſuperior to many of thoſe which " are now imported."

From the foregoing accounts, it is evident that good wine may be made in this country in a propitious ſeaſon: And it is alſo certain, that formerly there have been Vineyards in many parts of this kingdom, particularly near Abbeys and Monaſteries. This plainly appears by the lands in various places ſtill retaining the name of Vineyards: But Antiquaries are ſilent as to the reaſons of their being rooted up and neglected.

FINIS.

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